

WEAPONS OF THE VIKING WARRIOR

GARETH WILLIAMS





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INTRODUCTION

Of the many peoples and cultures across history, few have been more closely associated with warfare than the Vikings. Although the term ‘Viking’ is often applied to the whole population of Scandinavia in the period c.AD 750–1100, the word *vikingr* in Old Norse meant ‘pirate’ or ‘raider’, and to *fara i viking* meant to go on a raiding expedition. This does not mean that the whole of the population were warriors or raiders. Archaeological evidence demonstrates the importance of Vikings in the development of towns across northern Europe, linked in a vast and unprecedented trading network from the Atlantic to the Middle East and Central Asia. Their skills as shipbuilders and sailors took them even further afield, to uninhabited lands in Iceland and Greenland, and even to North America. They were capable of exquisite craftsmanship, especially in wood and metal, and they wrote complex and highly structured poetry. Most of the population were less obviously remarkable, and were involved in the farming, fishing and hunting that supported Viking society as a whole, although the harsh living conditions in many parts of the Viking homelands means that even this was no mean achievement.

Despite this, it is raiding and warfare which gives us the concept of the ‘Viking Age’, and which dominates contemporary accounts of the period as well as more recent perceptions. The Viking Age coincides with a period of limited historical evidence across western Europe. With a few exceptions, all that survives is the equivalent of the annual highlights of each year’s newspaper headlines, and peaceful trade and craftsmanship rarely make the headlines. By contrast, the warlike activities of the Vikings *were* newsworthy, from early raids on monasteries which were considered untouchable, to the conquest of major kingdoms in England in the 9th century and settlement by force in many parts of Britain, Ireland and continental Europe, and eventually the creation of a short-lived North Sea empire (1028–35) under Cnut the Great which included the whole of England, Denmark and Norway. Even unsuccessful Viking warfare could



be noteworthy. The Vikings attacked the great Moslem city of Seville in southern Spain in 844, and Constantinople (modern Istanbul) in 860 and 941, although they were driven off in both cases. They even occupied the city of Bardha'a in Azerbaijan for several months in 943–44, defeating all attempts to remove them by force, but were eventually overcome not in battle but by illness.

An image of the Vikings has been built up in the popular imagination as warriors who were somehow stronger, fiercer and more savage than their opponents, and more successful in battle. A part of this image is the idea that the Vikings were also better equipped and more heavily armed than other peoples of the time, having a particularly close relationship with their weapons. This perception is largely fiction, but based around a core of fact. The Viking conquests in Britain, Ireland, Normandy and Russia could not have taken place unless the Vikings were skilled and

Grave goods from Steinsvik in northern Norway. The combination of sword, axe and spear suggests a fairly wealthy warrior, especially as the sword hilt is decorated with gold inlay. The presence of a variety of tools as well as the weapons implies, however, that the dead man was not simply identified as a warrior. (Museum of Cultural History, Oslo/CC BY-SA 4.0)



Spear, bridle, axe and shield boss from Enlaug, Løten, Hedmark, Norway. These items do not come from a single grave, but show the range of objects found in weapon graves, which sometimes include riding equipment as well as weapons. (Museum of Cultural History, Oslo; photograph: Ove Holst/CC BY-SA 4.0)

successful in warfare. They were also extremely successful at a strategic level. Their hit-and-run tactics used against targets along coastlines and navigable rivers were difficult to counter, and their ability to wage large-scale campaigns in enemy territory over extended periods (sometimes years at a time), and often in the middle of winter, was far ahead of most of the peoples with whom they came into contact.

Such success owes more to organization and strategy than inherent superiority on the battlefield, however. Detailed study of Viking activity in any given country shows that they often avoided battle, and that they typically lost as many battles as they won. The weapons they used were also less distinct from those of their contemporaries than is often imagined. Although both Arabic and Frankish sources praise the quality of Viking swords, many of the best Viking weapons were imported, and much of their equipment was similar to that of their Anglo-Saxon and Frankish contemporaries (see pp. 59–65). This reflects a shared heritage from the period before the Viking Age, an ongoing network of trade connecting the Vikings with those who were sometimes their enemies, the Vikings' adaptability and willingness to learn from others, and the willingness of others to learn from the Vikings' own innovations.

HOW DO WE KNOW?

Although the Viking Age is regarded as a historical period both in western Europe and the Middle East, it is regarded as the last part of prehistory in Scandinavia. The Vikings had their own alphabet, a form of letters known as runes, designed to be carved rather than written. Runic inscriptions survive from across the Viking world, but these are generally very short. Although they can contain important historical information, each inscription tells us relatively little, and often more about specific individuals than about Viking society as a whole.

Other contemporary sources of information come from the Vikings' enemies, both in western Europe and in the Byzantine Empire and Islamic Caliphate in the east. These are mostly relatively brief accounts, and both short raids and long campaigns are summarized in a few words or sentences, in what are known as annals or chronicles, which set out the main events year by year, but with little detail. Some individual events happen to be recorded in more detail, however. The siege of Paris in 885–86 (see p. 56) and the battles of Brunanburh (937) and Maldon (991) were the subject of poems by the Vikings' enemies, and relatively detailed

accounts survive of individual events such as a battle at Poole, Dorset in 896, and the Viking campaign at Bardha'a in Azerbaijan in 943–44.

A final source of written information comes from the later Icelandic sagas. These narrative accounts of the Viking Age are typically more detailed than contemporary sources, but were only written down from the late 12th century onwards, long after the events they describe. Many contain earlier poetry, although the forms of the poetry often make the meaning obscure. The saga text around the poems relies on oral tradition passed down with varying degrees of accuracy, and often contains later anachronisms. Sagas thus provide useful information, but are problematic and unreliable.

In addition to written evidence, we have archaeological evidence of the Vikings. This includes surviving examples of weapons and armour, but also little figurines and stone carvings showing warriors with their weapons. In addition, skeletal remains with weapon injuries help us understand how Viking weapons were used.



Stone carving from Hammars, Gotland, Sweden. The scene shows warriors on board a ship confronting warriors on land, led by a priestess wielding a torch. The warriors on both sides are armed with swords and shields. The overlapping shields suggest the formation known as the 'shield-wall' (see p. 42). (Per Widerström & Johan Norderäng)



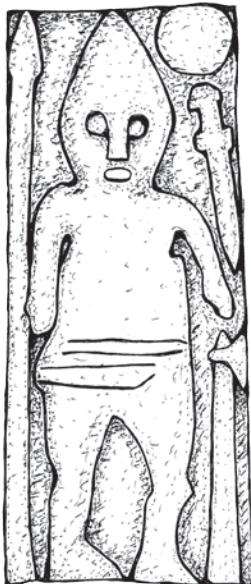
Rune stone from Gamla Uppsala, Sweden. The surviving inscription tells us that Sigviðr England-farar raised the stone in memory of his father Vidjarf. The information provided is limited, but this is one of a number of stones which refer to people from eastern Sweden being active in England in the late 10th and 11th centuries, something which is otherwise unrecorded. (Author's collection)



DEVELOPMENT

An array of weaponry

Detail taken from a 10th-century Anglo-Scandinavian stone cross from St Andrew's Church, Middleton, North Yorkshire, showing a Viking warrior surrounded by the full weapon set of sword, spear and axe, with a fighting knife at his waist. He also has a helmet and shield, although the latter is undersized to fit into the picture. (Author's collection)



THE WEAPON SET OF THE VIKING WARRIOR

For most of the Viking Age, the Vikings fought as groups of individuals, rather than as formally structured armies with standardized equipment. There was therefore considerable variation in the range of weapons that a Viking warrior might carry. This depended on the wealth of the individual warrior, his access to a wealthy lord who might provide weapons and armour in return for loyalty and service, and on his success in battle, as even a warrior without much wealth of his own might hope to take weapons and other loot from defeated enemies on the battlefield. There was also some variation across the Viking world, with potential influences from different neighbouring cultures, while the length of the Viking Age also means that there were developments within some of the main weapon types.

While there was no standard combination of weapons, it was customary to carry multiple weapons for different purposes, and a well-equipped warrior might carry as many as four or five weapons in addition to armour, although most probably carried fewer, as this would represent a very significant investment of wealth. This book will nevertheless explore the full weapon set of the Viking warrior, even if not all warriors possessed it. The different weapons covered a range of functions, including some suited for fighting in close formation and others more appropriate for use either in loose formation or individual hand-to-hand combat. Others again were particularly useful either on horseback or for use on foot against mounted opponents. Most of the weapons were designed for use at close quarters, but spears and axes could also double as missile weapons. Archery was also a feature of Viking warfare, and while many if not most archers may have been lightly armed troops distinct from warriors in the line of battle, both literary and archaeological evidence

suggests that some well-to-do warriors carried bows and arrows into battle (see p. 22 *et seq.*).

Excluding the bow, the full weapon set included one or more spears, sword, axe and fighting knife, while the main form of protective gear was the shield, which could also be used offensively as well as defensively. Further protection was offered by helmets and either metal or padded body armour, or a combination of the two. The full weapon set is rarely found in weapon burials, which provide the most common source of direct evidence for weapon combinations, while stray finds of weapons (whether casual losses or deliberate sacrifices) tell us nothing about their use within the weapon set. The combination is confirmed by pictorial evidence; and by an account of Viking warriors in the east by the Persian scholar and historian Ibn Miskawayh (932–1030), in which he said that ‘The warrior fights with a lance and a shield. He carries a sword and a lance and a dagger’ (Lunde & Stone 2012: 146).

THE SPEAR

One of the most common Viking weapons was the spear. The fact that relatively little iron was required for the spearhead meant that this was one of the cheaper weapons to produce, and it was also relatively straightforward to manufacture in its simplest form. The spearhead was typically made from a single strip of metal, part of which was shaped into a sharpened blade-like head, while the tail-end would be bent round into a socket, into which the wooden shaft could be inserted. In many but not all cases this insertion of shaft into socket was secured with a rivet.

The relatively low cost of production meant that the spear was an affordable weapon for many, and the fact that spears were useful for hunting as well as warfare probably meant that many people who were not full-time warriors would have possessed one. Spears were not necessarily low-status or clumsy weapons, however. Some surviving examples have pattern-welded blades (see p. 19), while others have decorative inlay. In both cases this added significantly to the cost of the spear, but resulted in a visually distinctive weapon which signified the status of its owner, but which could also be easily recognized and recovered from the battlefield. Even the simpler versions had to be well balanced to be used effectively.

Most of the evidence for spears is archaeological, and the bulk of this comes from graves, although others have been recovered from rivers and bogs. Because of the different conditions for survival in the ground, it is normally only the spearheads that survive; the shafts have perished, although written sources suggest that ash was a favoured wood for shafts. There is also some pictorial evidence for spears, and although contemporary manuscript illustrations often bear little relation to surviving examples, the simpler spears depicted on stone carvings have a more obvious resemblance to surviving spearheads.

Illustrations also give some idea of the length of the spear, which is difficult to gauge from the spearheads alone, and these can also be

Large spearhead from the late Viking Age, found in London. The breadth and weight of the spearhead show that it was intended for thrusting rather than throwing. Although the decoration is no longer easy to see, the socket was decorated with incised designs and inlaid silver wire, reminding us that spears were not just low-status weapons. (© The Trustees of the British Museum)



compared with pre-Viking spears which have survived in bog deposits. A total length of 2–3m was typical, meaning that even the shorter spears were somewhat longer than the height of most Viking men.

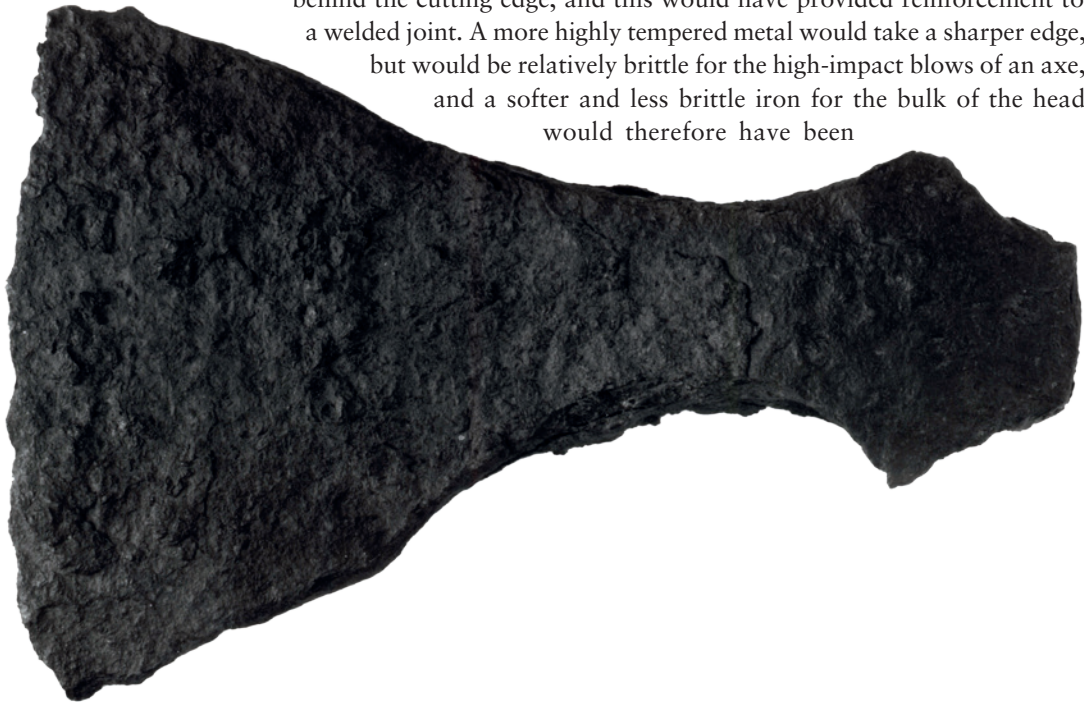
Spears were used for both throwing and thrusting, and this is reflected in the variety of sizes and shapes of spearheads. The spearhead could be broad and heavy to add momentum for thrusting, or slender to make it more aerodynamic for throwing; but while some spearheads can readily be identified as being designed either for thrusting or for throwing, others are more ambiguous, and could have been used for either or both. The length, breadth and weight of the shaft would also have made a significant impact on how an individual spear could be used. Although the size of sockets in spearheads gives some idea of the breadth of the shaft at that point, it is often less clear how far the shaft would have continued to taper beyond the socket.

Some graves have been found to contain more than one spear, suggesting that warriors may have begun the battle by throwing spears, reverting to thrusting spears or other weapons once these had been thrown.

Head from a hand-axe from Hof, Hedmark, Norway. Although it lacks the extended 'beard' of some other hand-axes, the slight curve on the underside means that this could be used effectively to hook other weapons and shields, as well as to strike blows. (© The Trustees of the British Museum)

THE AXE

Like the spear, the axe in its simplest form was cheap and simple to produce, requiring a relatively small quantity of iron, although the axe was not necessarily a low-status weapon, as shown by a number of axe-heads ornamented with gold and/or silver. The axe-head could be forged from a single piece of iron, but some appear to have been made by welding a separate cutting edge into the head. Some axes are slightly ridged just behind the cutting edge, and this would have provided reinforcement to a welded joint. A more highly tempered metal would take a sharper edge, but would be relatively brittle for the high-impact blows of an axe, and a softer and less brittle iron for the bulk of the head would therefore have been





preferable. Even so, the heavy impact meant that an axe could be a highly effective weapon even if blunt.

As with the spear, only the axe-heads typically survive, while the wooden shafts have normally perished. Axe-heads include a wide variety of shapes and sizes, some of which may have doubled as tools. Given the importance of building temporary fortifications quickly, which appears as a recurrent element in Viking campaign strategy when in hostile territory, a combined weapon and tool could be particularly useful. Other axe-heads were of more specialized forms, however, designed for particular functions, whether as weapons or tools. The shape of both the blade of the axe-head and the socket vary, with some blades having a very short cutting edge, others a wide and sweeping edge, and others a 'beard' or hook at the lower edge of the blade, useful for hooking an opponent's weapon or shield. The socket could be a simple ring, but many (especially on larger axe-heads) have spurs extending the socket a little further up and down the shaft, making it less likely that the head would work loose.

Almost all Viking axes from Scandinavia and western Europe have a single-bladed head, but examples from the eastern Baltic and Russia sometimes have a projecting spur at the back, either in the form of a pick-head or a hammerhead. Such forms seems to have been borrowed from the Vikings' eastern neighbours, but examples are known with

The size and weight of this large axe-head indicate that it was used on a double-handed shaft. Experimentation shows that a shaft that comes up to around the chin of the person using it is optimally balanced. Longer shafts give added reach, but are harder to control. (© The Trustees of the British Museum)



Axe-head from Ludvigshave, Vesterborg, Denmark. Because the cutting edge on this axe-head is not attached to a solid axe-head, it would be lighter and faster to use than a solid axe-head of comparable size, but would deliver blows with less impact. It is unclear whether the openwork design was functional or decorative, but other examples of the type are known. (Roberto Fortuna & Kira Ursem/National Museum of Denmark)

Scandinavian decoration, leaving no doubt that the form was adopted at least within Viking society in the east, rather than all of the known examples representing foreign imports.

Axes suitable for single-handed use were used throughout the Viking Age. A larger type of axe-head, with a broad curved edge and mounted on a long double-handed shaft, seems to have been an innovation of the late 10th century, and was particularly common in Denmark. This coincides with a period in which riding gear also became more common in Danish weapon graves, and it seems likely that the axe was developed as a specific response to the increased use of cavalry in warfare. These large axes were adopted by the Anglo-Saxons in the 11th century under Danish influence, and are shown in use against Norman cavalry on the Bayeux Tapestry.

THE KNIFE

A fighting knife also seems to have been a relatively common weapon, as distinct from smaller knives which also were carried as day-to-day tools and implements. Like the spear and the axe, the fighting knife required only a relatively small amount of iron, and could double as a tool for various purposes. It has been suggested that some surviving examples



were used for hunting rather than in battle, as although the fighting knife is found in some weapon graves, such graves are a broader reflection of social status, and not all items within a weapon grave necessarily had a military function. The fighting knife is portrayed worn horizontally at the waist on the Anglo-Scandinavian stone cross at St Andrew's Church in Middleton, North Yorkshire (see p. 8), and a few examples of sheaths for large knives worn horizontally also survive. The fighting knife is also described as one of the typical weapons of the Vikings by Ibn Miskawayh (see p. 9).

The fighting knife typically had a sharpened front edge and a sharp point, but only the first few centimetres of the back edge were sharpened. Such a feature shows that the knives were designed in part as cutting weapons, but the sharp double-edged point was ideal for thrusting. The blades of fighting knives were relatively broad and heavy, enabling them to absorb the force of contact more effectively than a lighter utility knife.

The shape of the blade varies, with some having a pronounced curve to one edge while others have a more gradual taper to the point. The shorter back edge is typically straight or slightly tapered, rather

Modern replica of a *sax*, or single-edged fighting knife. The blade is pattern-welded for added ornamentation. The sharply angled point makes this knife ideal for thrusting. The slight construction means that while the fighting knife could also be used effectively in a slicing action, it lacks the power of larger weapons for heavy cutting actions. (Author's collection)

Re-enactor with a fighting knife worn horizontally at the waist, as shown in various contemporary carvings. (Author's collection)





Sword hilt from Steinsvik, Nordland, Norway. The hilt is highly decorated, and is of Frankish type. As an import, it reflects the wealth of its owner, but may also have symbolized that he had travelled or had connections overseas. This weapon is also shown on p. 63. (Museum of Cultural History, Oslo; photograph: Eirik Irgens Johnsen/CC BY-SA 4.0)

than curved, adding to the sense of ‘front’ and ‘back’. Judging from both pictorial and archaeological evidence, a simple wooden handle without guard was typical. As a result, although the fighting knife can be used defensively, it has the risk, if used for parrying, of the opponent’s blade sliding down the blade of the knife and onto the undefended hand.

Length also varies considerably, from a short blade which can unquestionably be seen as a knife, to others as long as swords, and it is not clear that there was always a meaningful distinction between long knife and short sword in terms of how they were used. In general terms, however, sword blades were broader and heavier in relation to their length, and swords had cross-guards while fighting knives did not.

THE SWORD

Unlike the spear and the axe, the sword was designed solely for use in combat, while the fact that it necessarily contained more metal than other types of weapons made even a basic sword a relatively high-status item. Despite this, some swords have relatively plain and functional designs, with undecorated blades and hilts, but both blade and hilt could be ornamented. This had the effect of enhancing the owner’s status further, while also making individual swords easy to recognize. The importance of recognizable weapons relates in part to the fact that weapons had social as well as practical functions (see p. 29), and these could be emphasized



Sword, late 8th or early 9th centuries, from Kalundborg or Holbæk, Denmark. The sword dates from around the beginning of the Viking Age. A herringbone pattern-welded design is clearly visible down the centre of the blade. (Arnold Mikkelsen/ National Museum of Denmark)

THE CLASSIFICATION OF HILT TYPES

Viking swords are largely classified by the shape of the hilt. This includes the shape of the upper and lower guard and pommel, both in profile and in section. Although there is some correlation between the shape of different hilt types and the decoration typical for each type, the decoration is only a secondary feature of most types. In some cases, however, the style of decoration does provide clues to the origins of particular types through parallels with other forms of metalwork.

The main classification was developed by Norwegian archaeologist Jan Petersen in his book *De Norske vikingsverd* ('The Norwegian Viking Sword'), in which he proposed a classification of 26 main types, and 20 'distinctive' types (Petersen 1919). An alternative classification system of western European types (including Viking types) was proposed by Alfred Geibig, based on a combination of the forms of both blade and hilt (Geibig 1991). It can be problematic, however, to apply Geibig's classification to some swords in museum collections, where hilts and blades from different weapons have been combined to make a single displayable sword, and Petersen's classification by hilt type alone remains more widely used.

Some criticisms have been made of Petersen's work, and some of his rarer types may be considered as variants of more common types rather than as genuinely distinct types of their own. Furthermore, as the title of Petersen's book suggests, his classification was largely based on Norwegian finds, and various revisions have been made to his type series to accommodate finds from other parts of the Viking world. Nevertheless, a century on, Petersen's classification still forms the core of most studies of hilt

types in the Viking Age. Applying this classification to finds from clear archaeological contexts has also meant that it is possible to attribute most types reasonably closely both geographically and chronologically.

This means that it is possible to distinguish within the overall typology between types with their origin within the Viking homelands, and others of Frankish or Anglo-Saxon origin. In some cases Frankish or Anglo-Saxon weapons moved around the Viking world (see pp. 60–63). For example, some of the most beautiful and most frequently illustrated 'Viking' swords are actually Frankish swords of Petersen's type K. In other cases, hilt types from one area were copied in another, so it is not always possible to say for certain, for example, that a sword of Petersen type L, which originated in Anglo-Saxon England, is of Anglo-Saxon or Viking manufacture.

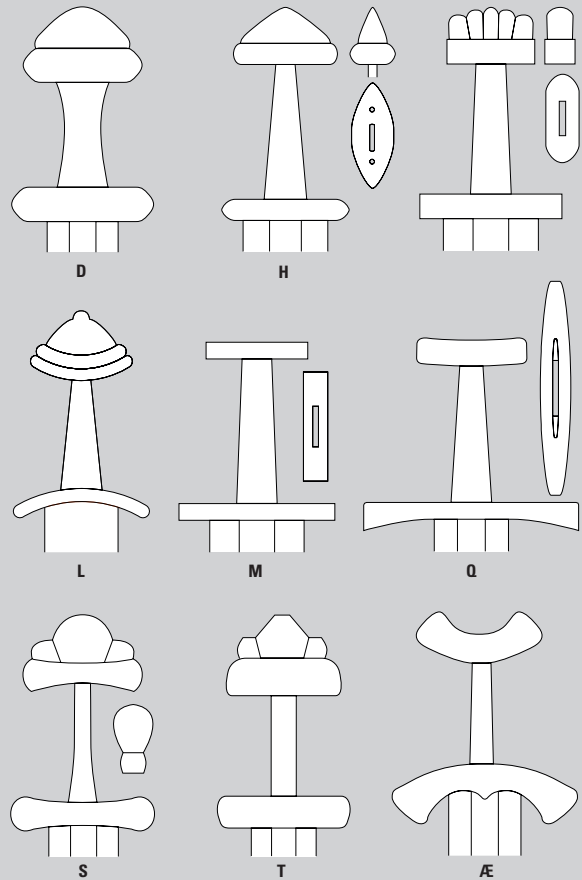
Within the overall classification it is possible to group similar types together, according to key features. Several types, for example, have more or less triangular pommels, while other groups are linked by having domed pommels, three-lobed or five-lobed pommels, or no pommels at all. By comparing these groups with the chronological range of individual types, it is possible to see how some types evolved over time into others. While some changes in the size and shape of hilt fittings would have affected weight and balance, the main driving force behind changing hilt designs seems to have been fashion rather than function. A general shift from flat to down-curved cross-guards from the 10th century onwards may have occurred because the latter style of cross-guard made it easier to trap an opponent's blade during combat, however.

further through elaborate decoration on the scabbard. Scabbards seem typically to have been multi-layered, with an inner layer of sheepskin or textile to protect the blade, a rigid layer of wood over that, and an outer layer of leather, in some cases with a further layer of textiles between the wood and the leather. The leather could be tooled or painted, while metal chapes and top-mounts added further decoration while also protecting the two ends of the scabbard. Frankish law-codes suggest that a scabbard was often as expensive as the sword itself.

Viking swords are typically quite heavy, and while this weight adds to their power both in cutting and thrusting, it means that the sort of subtle finger-work used to change the direction of attack quickly with later, lighter weapons is difficult. This does not mean that Viking swords are necessarily clumsy, though. Most have substantial hilt fittings, and



Sword hilt of Petersen type T from Kosgården Åsnes, Hedemark, Norway. This type is dated to the late 10th–early 11th centuries. (Museum of Cultural History, Oslo; photograph: Eirik Irgens Johnsen/CC BY-SA 4.0)



This illustration shows a variety of Petersen's types spanning the 9th to the 11th centuries: D, H, K, L, M, Q, S, T and Æ.

particularly heavy pommels, and this helps to pull the balance of the weapon back towards the hand.

The hilt typically consists of a cross-guard to protect the hand in use, and an upper guard and pommel. Both upper guard and cross-guard are normally slotted to fit over the tang of the blade, and the end of the tang peened over to stop the upper guard sliding off. In some types the pommel is made as a separate piece, and attached to the upper guard, while in others the pommel and upper guard are made in one piece, and some swords (e.g. types M, Q and Æ) have no pommel at all. A grip of wood or bone would be fastened over the tang. This had the double function of providing the user with a better grip on the sword in use, and locking the guards tightly into place. The grip would be covered with leather and/or gold or silver wire, combining a better grip than wood or bone with a decorative function. Carved wood

Sword, probably from the River Thames, late 10th century. The sword can be dated from the shape of its hilt (Petersen type S), but also from decoration in the 10th-century Mammen style. (© The Trustees of the British Museum)



or bone would also potentially have combined a better grip with an enhanced appearance, but it is rare for the organic parts of sword hilts to survive.

Sword blades typically have enough of a point that the sword could be used as a thrusting weapon, but the Viking sword was primarily designed for cutting. Both single- and double-edged blades are known, but while double-edged blades are known throughout the Viking Age, single-edged blades are largely restricted to the earlier part of the period, and are also more common in Norway than in other parts of the Viking world.

The sword blade may be made from a single piece of metal, or from several. A process known as pattern-welding allowed the construction of blades from several bars of iron or steel, folded and twisted together. This created a variety of decorative patterns, depending on the precise ways in which the different pieces of metal were combined, and this decoration could be enhanced through polishing and oiling.

Older works on the subject have often suggested that the purpose of pattern-welding was to produce sword blades of superior quality, with the different qualities of the different alloys complementing each other to provide the optimal combination of hardness and flexibility. More recent analysis, based in part on practical experimentation, suggests that the function was primarily decorative, and that creating a blade from multiple pieces of metal would make for potential points of weakness along the joints. Nevertheless, the decorative effect and the added cost of the labour involved meant that pattern-welding represented added luxury to what was already an expensive weapon.

Evidence of pattern-welding is found throughout the Viking Age, but is particularly common on weapons of the 8th and 9th centuries, representing direct continuity from the pre-Viking period when the technique was already well known in Scandinavia and elsewhere in northern Europe. From the late 9th century onwards, inscribed sword blades became a more common expression of wealth and status. This style seems to have been borrowed from the Franks, and imported Frankish blades were common. The Rhineland seems to have been a particularly important centre for blade-making. Repeated laws forbade the sale of arms and horses to the Vikings, but as in other periods of history such attempts to restrict the arms trade seem to have been of limited effect. In some cases, Frankish weapons may also have been won on the battlefield.

Frankish sword blades are found across the Viking world, sometimes combined with locally produced hilts, suggesting that the blades themselves were traded, while in other cases the entire weapon appears to be Frankish, with a number of Frankish hilt types identified in Viking contexts. Some of the inscriptions on sword blades appear to be illiterate, but others appear to represent makers' names. Of these, the most common is Ulfberht, but this name seems to have been used for more than 200 years after its first appearance in the mid-9th century, and the quality of Ulfberht blades (as well as the spelling of the name) varies considerably, suggesting that what was perceived as a desirable brand may have been copied by inferior smiths.

PATTERN-WELDING

Pattern-welding is a technique for making blades out of several pieces of metal rather than a single piece. Individual rods and bars were twisted before being hammer-welded together to form a decorative core, after which a separate cutting edge was added. The technique was both time-consuming and expensive, and was used primarily to create visually distinctive and attractive sword blades, rather than for any practical purpose.

Pattern-welding was well established in northern Europe before the Viking Age, but continued to be used by the Vikings and their contemporaries for high-status weapons. The technique is best known in swords from the period, but was also used in knives and spearheads. It became increasingly rare after the 9th century, probably in part because of changing fashions, but perhaps also because the technique created blades which were weaker along the weld joins than a well-made blade made from a single piece of metal.

Patterns could be created using anything from two to 12 bars in the core, and each of these might be formed either from a single piece or from multiple stacked pieces. Further variations in design could be created by twisting the bars to varying degrees at different points along the length of the blade. The stages listed below involve a simple and relatively common triple core being

used to create a herringbone pattern for a sword, but other designs were much more complex.

First, three individual rods or bars are hammered out to the same size. These may be made of a single piece, or each one may be made of a stack of flat bars welded together. Then, each of the rods is heated and twisted to create a spiral pattern along its length. Each of the rods is squared off by hammering to create bars with flat surfaces, while retaining the diagonal pattern from the twisting. The bars are then placed alongside each other with the diagonal pattern going in alternate directions for contrast. The bars are heated and hammer-welded into a single block. The block is then shaped further, including a fuller if required, a tang for the hilt, and a narrowing towards the point. A single bar is created for the edges, split with a chisel and bent back to form the point. The edge bars are heated and hammer-welded to the core. The edge bars are then hammered to create a shaped edge all around. The lower guard, grip and upper guard are placed over the tang, and the end of the tang peened over the upper guard. The pommel is riveted to the upper guard. Leather or wire may be added to make the grip less slippery, together with added ornamentation. The edges are sharpened with a grinding wheel, and finished with a whetstone. Finally, the blade and hilt are polished.



Detail of pattern-welding from a modern single-edged blade. The blade is made from multiple stacked bars hammered flat, which show clearly in the cutting edge. The whorled pattern is the result of twisting the whole stack at regular intervals. (Author's collection)



Sword from Langeid, Norway, 11th century. The shape of this late Viking Age hilt represents the transition from traditional Viking forms to designs which became more popular in the later Middle Ages. The elaborate hilt design features Christian motifs, reflecting the widespread Christianization of the Vikings by this time. (Museum of Cultural History, Oslo; photograph: Vegard Vike/CC BY-SA 4.0)

Recent metallurgical analysis suggests that some Viking sword blades may have been imported from the Islamic world, as they were made of a quality of steel otherwise unknown in the west at this time. An account of the Viking attack on Bardha'a in 943–44, however, suggests that the Viking swords were considered superior to those made locally (see p. 65).

Making pattern-welded swords (opposite)

Here, a sword-smith works on the edge of a simple pattern-welded blade, having previously welded the edge to the core. Behind him are components for other swords, including rods which have been twisted to create a spiral pattern along their length. These twisted rods are then flattened into bars, so that the spiral forms a diagonal pattern. Three of these bars are then welded together to form the core of the sword, forming a herringbone pattern from the diagonal bars. The edges are created separately from a piece of steel and welded to the core, and then hammered at an angle to produce the edge all around the blade. It is this process that the smith is completing. The edge will then be sharpened on the grinding wheel on the right of the scene, and finished with the whetstone hanging from the smith's belt. Behind the smith are the hilt fittings, which will be added, together with a wooden grip, once the blade has cooled. Beside the smith, one of his assistants examines a completed sword before presenting it to a customer.



BOWS AND ARROWS

It is hard to know how typical the bow was within the weapon set of the Viking warrior. Bows and arrows suitable for warfare certainly existed in the Viking world, and arrowheads embedded in the defences of the late 10th-century fortress at Trelleborg in Denmark provide direct evidence of the use of archery in battle. Contemporary poetry also references archery, sometimes in the form of a ‘storm’ of arrows, implying large-scale use of the bow, although the terminology is sometimes ambiguous between arrows and throwing spears.

Norwegian law-codes from a little after the Viking Age specified that a bow should be provided for every two warriors serving in the regional ship-levies owing service to the king, and there are also saga references to high-ranking figures using bows in battle, such as the chieftain Einar Belly-Shaker at the battle of Svoldr in 1000. There is debate as to the extent to which either the sagas or the law codes can be used as evidence for the Viking Age itself, though, and while there is clear evidence for archery, it is possible that archers were commonly lightly armed auxiliaries rather than the same warriors who fought in the line of battle. This would have parallels in other periods and cultures, and is also suggested by the representation of unarmoured archers in the margins of the Bayeux Tapestry, which dates from the late Viking Age. Arrowheads are known from some Viking warrior graves, but these are typically of general-purpose type, and may have been used for hunting rather than warfare.

Whether or not the typical Viking warrior was also an archer, there is no reasonable doubt that archery played a significant part in Viking

Arrowheads from Sørup, Måløv, Denmark. Leaf-shaped arrowheads like these are among the most common types to survive from the Viking Age. They were effective for cutting into flesh, but their breadth gave them less penetrating power through wood or armour than some other forms of arrowhead. (Arnold Mikkelsen/National Museum of Denmark)





warfare. A complete longbow of yew was found in the Viking town of Hedeby, on the southern border of Viking-Age Denmark, along with a substantial part of another longbow. A near-complete longbow was also found in a Viking-Age context at Ballinderry in Ireland, which had no native tradition of archery at this time. Arrowheads have been discovered not only in graves, but also as site finds. While most of these have a leaf-shaped blade, suitable for hunting or for use against unarmoured enemies in war, there are also bodkin-type arrowheads designed for use in battle. Unlike the leaf-shaped blade, these would easily penetrate through the rings of a mail shirt, and with sufficient force could penetrate metal plate. According to one interpretation, the Gjermundbu helmet (see p. 25) has been damaged by an arrowhead.

Computer calculations and experimentation with replicas of the Hedeby longbow indicate a draw-weight of up to 104lb (47kg), with a range of up to 180m, although this represents the upper limit of what is likely, and the Hedeby longbow may have been less powerful. The Ballinderry longbow is slightly lighter in construction, and would therefore have had less power than the Hedeby longbow, while neither would have been as powerful as the heaviest late-medieval longbows. Nevertheless, although many commentaries on the longbow have seen it

ABOVE LEFT

Replica longbow made of ash, with a leather grip. This is a slightly lighter construction than the few surviving examples from the period. While not as heavy as the great war bows of the later Middle Ages, the estimated draw-weight of surviving bows was enough for arrows to penetrate mail, helmets and shields. (Author's collection)

ABOVE RIGHT

Modern replicas of a variety of forms of arrowheads used in the Viking Age. (Author's collection)

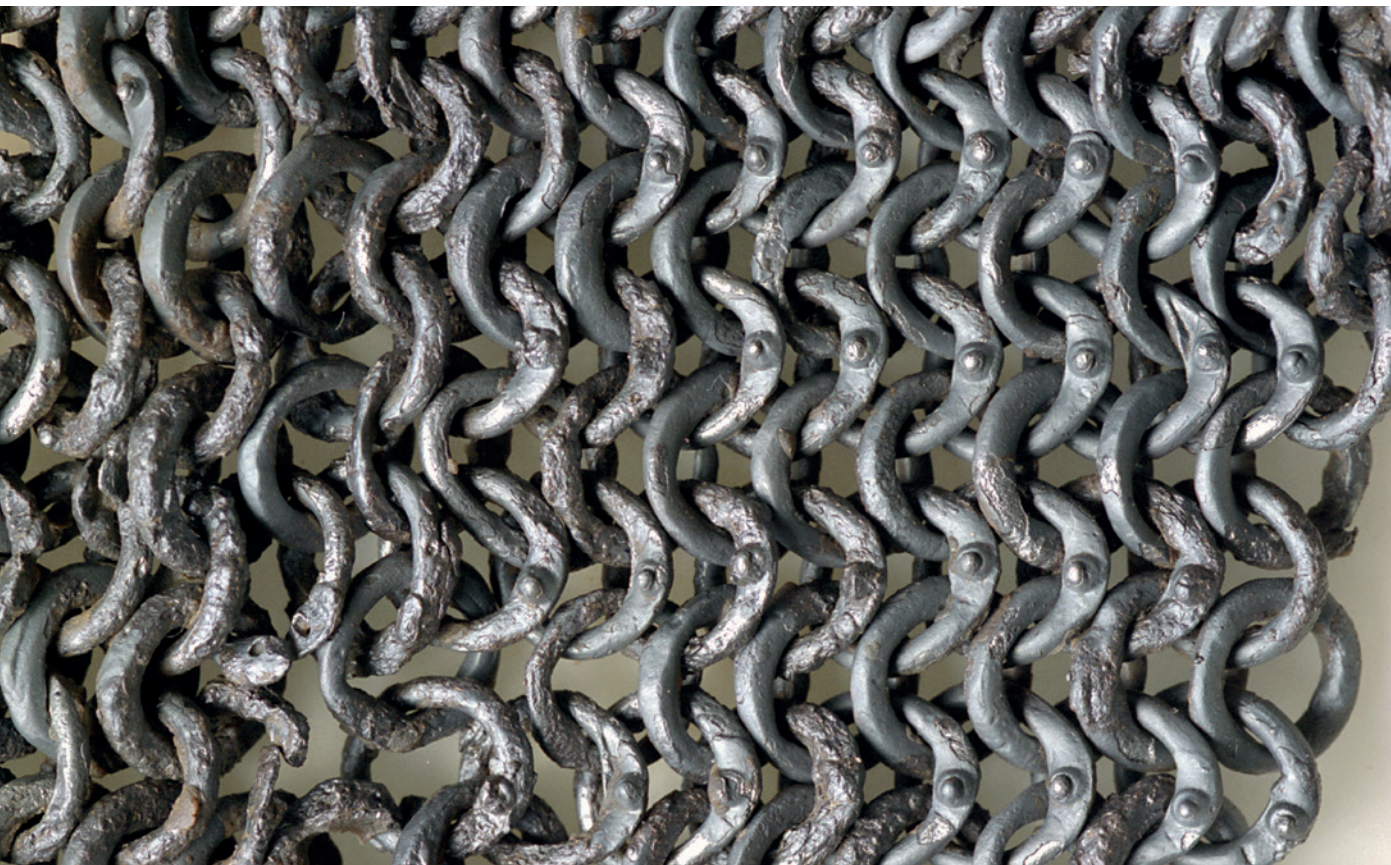
as entirely a post-Viking development, the Hedeby and Ballinderry longbows provide clear evidence for longbows with the power to punch through Viking-Age armour as long as the range was not too great.

ARMOUR

The combination of weapons within the overall Viking weapon set was designed to deal not only with a variety of combat situations, but with different levels of personal protection. Written and archaeological evidence both suggest that helmets and shields were relatively common, but that body armour was much rarer, at least until the late Viking Age. This may in part reflect burial practice, as shields were relatively cheap to produce and to replace, whereas both the quantity of metal and the amount of labour involved in making a mail shirt made it a luxury item, probably even more expensive than a sword. For this reason, mail was probably only deposited in extremely wealthy graves, and very little survives from the Viking Age. The high cost probably meant that few Viking warriors could afford mail in the first place, however.

Mail, though heavy, was flexible, and did little to impede upper-body movement. It was therefore not a serious hindrance to wielding any of the weapons discussed here. It was designed to stop a cutting or slicing action, and would also absorb some impact from blows from all but the heaviest of weapons. Mail alone provided relatively little protection against a heavy concentrated blow, however, as this would simply drive the rings into the body underneath. To be effective, mail needed to be worn over

A close-up view of a mail shirt from a 10th-century burial at Gjermundbu, Norway. It is likely that access to mail for most Vikings was limited to looting from defeated enemies. There is also a small amount of evidence for the use of lamellar armour, made up of small metal plates laced together with thongs. All of the evidence for this comes from the Baltic, and there is no evidence that lamellar armour featured in Viking wars in Britain, although the possibility that it may have been worn by Swedish warriors in England cannot be excluded. (Museum of Cultural History, Oslo; photograph: Vegard Vike/CC BY-SA 4.0)





some kind of padded garment, and although there is no direct evidence for this in the Viking Age, it seems likely that mail was worn over a padded coat, either built up of multiple layers, or stuffed, and that such garments would have provided some protection against glancing blows even without mail. The combination would, however, have been hot as well as heavy, and this would have affected stamina when wielding weapons for a long time in battle.

Surviving helmets are also rare. The only example to survive from Viking Scandinavia is a domed helmet with a spectacle-shaped guard from Gjermundbu in southern Norway. This also had a mail aventail at the back of the neck, and perhaps also mail over the lower face. Pictorial representations and written references suggest that helmets were more common than archaeological evidence alone would indicate. Illustrations suggest that a conical helmet with a nasal guard was the most common form, at least in the later Viking Age, and examples are known from around northern and eastern Europe from this period. Helmets made of boiled leather were perhaps used in addition to metal helmets. Leather helmets would be both lighter and cooler to wear, while still providing some protection from glancing blows, but their organic material would make them unlikely to survive archaeologically. Both domed and conical helmets provided protection for the upper part of the head, this being a prime target for blows from both swords and axes, while both spectacle and nasal guards protected against cutting blows across the eyes and nose. None of the recorded helmet designs provided much protection against thrusts to the face, or against cuts or thrusts to the lower part of the face, so this must have been vulnerable to blows from a variety of weapons.

The lower face, torso, and upper legs were protected by a wooden shield, with a metal boss in the centre to protect the hand. Typically, the boss is all that survives, but 64 complete shields survived in the Gokstad ship burial at Vestfold, Norway, and the wooden parts of a shield were found at Trelleborg in Denmark in 2008. Some shields had metal rims

ABOVE LEFT

Helmet from a warrior grave at Gjermundbu, Norway. It has attachments for a mail aventail to protect the back of the neck. The spectacle guard protects the eyes and nose from a lateral cut across the face, providing a trade-off between protection and vision. The Gjermundbu helmet has similarities to pre-Viking helmets in both England and Scandinavia, and probably represents a style which was already old-fashioned by the time it was buried. (Museum of Cultural History, Oslo; photograph: Leif Petersen/CC BY-SA 4.0)

ABOVE RIGHT

Another view of the Gjermundbu helmet. Although the Gjermundbu helmet has in recent years come to replace the horned helmet (which has no foundation in fact) as the standard representation of the 'typical' Viking helmet – probably because the more common conical helmet is difficult to distinguish from those used by other contemporaries – both archaeological and pictorial evidence suggests that the conical helmet, whether with nasal guard or eye-guards, and whether in steel or leather, had become the dominant form by the 11th century. (Museum of Cultural History, Oslo; photograph: Ove Holst/CC BY-SA 4.0)

Shield boss from Bolstad, Norway. Shields were often included in weapon graves, but usually the metal boss is all that survives. (© The Trustees of the British Museum)



although leather rims sewn around the edge of the shield appear to have been more common, and many shields were apparently faced and perhaps also backed with leather or rawhide for extra strength, while some also had reinforcement strips of wood or metal on the back.

Traditional interpretations of the Viking shield have tended to see it as a relatively passive form of defensive equipment. Experimentation in recent years suggests, however, that the shield could also be used more dynamically, almost as an additional weapon as well as for defence. The grip of the shield immediately behind the metal boss meant that the boss itself could be used to punch, while both the face of the board and the rim could also be used offensively (see p. 53).

Shield from the Gokstad ship burial, Vestfold, Norway, buried c.910. The burial contained 32 shields for the crew of the ship, half painted in black and half in yellow, although the paint is no longer visible here. Tiny holes around the edges of some of the shields suggests that a leather or rawhide rim was sewn on to the shield for reinforcement. (Museum of Cultural History, University of Oslo/CC BY-SA 4.0)





USE

Viking weapons in combat

WARRIOR SOCIETY

Within Viking society it appears that any free man had the right, though not necessarily the duty, to carry weapons. This was one of a number of differences between free men and thralls (slaves) which seem to have passed down from the Viking Age into later law codes, although the Gulathing law from western Norway notes that if a community was attacked, then all able-bodied men had a duty to respond, ‘whether thegn or thrall’ (noble or slave). This suggests that most men had some familiarity with weapons, but not that all men were warriors. Later law-codes from Denmark, Norway and Sweden refer to regional ship-levies, in which men could be summoned by the king to do military service. These laws in their surviving forms date from the late 12th century onwards, and the extent to which they reflect the situation in the Viking Age itself is much debated. In the past they have been taken as evidence of a society in which all free men were warriors, but detailed study of the occasions when such levies were actually summoned suggests that they were regarded as very much secondary to the professional warrior households maintained by kings and chieftains.

Whether or not these levies had their origins in the Viking Age, the perception of a clear difference between professional warriors and civilians who could handle weapons in times of emergency was probably equally acute at that time. At the same time, the right of all free men to carry weapons, the overlap between weapons of war on the one hand and tools and hunting weapons on the other, and the need to defend family and property from raiders all contributed to what has been termed a militarized society. Within such a society, there was therefore no barrier to any young free man who wished to seek a career as a warrior to do so, given aptitude and opportunity. Nevertheless, it is likely that those who

Silver penny of Eirik Bloodaxe, Viking king of Northumbria, final reign (c.952–54). The coin shows a sword as a symbol of royal power. Although the design is stylized, it reflects the heavy pommels typical of the 10th century. (© The Trustees of the British Museum)



Axe from the grave of a chieftain or high-status warrior, Mammen, Denmark. The head is inlaid with both gold and silver, making it immediately recognizable as well as decorative. The decoration does not detract in any way from the effectiveness of the axe as a weapon. (Roberto Fortuna & Kira Ursem/National Museum of Denmark)



came from warrior families, or from wealthy backgrounds, would have had more opportunity to seek careers as warriors themselves, given the high cost of weapons and armour, and the high probability of being killed or seriously wounded if engaged in armed combat without first having undergone proper training. Saga literature suggests that it was relatively common for young men of good family to spend a few years involved in raiding and warfare, gaining in social standing, reputation and experience as well as acquiring wealth, before settling down to more peaceful lives as landholders and farmers.

Two main categories of professional warriors appear to be visible in historical and literary sources, although an individual might find himself at different times in both categories, and the distinction was not always clear-cut. The first category was the *hirðmaðr*, or ‘household warrior’, of a chieftain, lord or king. As a member of a *hirð*, the *hirðmaðr* owed personal loyalty to his lord, whether he originated from the region ruled by that lord, or from elsewhere, and could expect to be rewarded for his loyalty and service. Skaldic poetry stresses generosity, alongside skill in war, as one of the most important characteristics expected of a lord. That generosity would be expressed in providing food and lodging for the *hirð*, as well as payment and gifts of gold and silver (especially arm-rings and other jewellery), but weapons also seem to have been a common reward for service. Jewellery and weapons were ideal as highly visible symbols of the relationship between a lord and his warrior, reflecting the wealth and success of both, and highlighting both the generosity of the lord and the achievements of the warrior in having earned such rewards.

Another model of military organization was the *félag*, or ‘fellowship’. This term appears in contemporary runic inscriptions, and may indicate membership either of a shared trading venture or a military company. The Frankish Annals of St Bertin note that in 861–62 a Viking fleet overwintering on the River Seine divided into groups in different ports for logistical reasons, with the division based on the *sodalitates* (‘brotherhoods’) which made up the fleet. Some brotherhoods may have been as small as a single ship’s crew, but others may have been mini-fleets of several ships. Archaeologist Neil Price has drawn comparisons with pirate fleets of the 17th and 18th centuries, which lacked the formal status

of state-run armies and navies, but which could nevertheless muster fleets large enough to hold their own against government forces. Such groups had ties and bonds within the group, but also the flexibility to merge with others and separate again as they saw fit. This would also fit with the original sense of *vikingr* as ‘pirate’, and the sense within Old Norse literature that ‘vikings’ were slightly outside the mainstream society of the period.

Whether as members of a *hirð*, or of a Viking brotherhood, a sense of shared identity was probably reflected in visual appearance. Contemporary Arabic accounts refer to Viking men wearing tattoos and make-up, and like modern street-gangs and some military units a shared design for tattoos might be used to reflect a group identity. A very limited fashion for horizontal file marks across the front teeth may also indicate membership of a particular group. Shared identity might also be expressed in weapons and armour, however. It has been suggested that a group of distinctly shaped shield bosses from France and another group from Viking Dublin were particular to the Viking bands that used them, while a bird motif on scabbard mounts from the garrison at Birka in Sweden may have been the symbol of that garrison, or (because it is found elsewhere in the east) of a larger warrior group from whom that garrison was drawn.

If elements of weaponry may have been standardized within particular groups, there was also a strong emphasis on individuality in the design and ornamentation of Viking weapons. In addition to variation in basic design, weapons differed significantly in the nature and extent of ornamentation. Swords in particular lent themselves to distinctive designs, with pattern-welded or inscribed blades, while the hilt fittings could be intricately worked, and inlaid with gold, silver or copper wire or foils. Because swords were often worn, the hilt was more often visible than the blade, and the scabbard also potentially added to the individuality of the weapon’s appearance, often with decorative metal chapes and top-mounts, while the leather covering of the scabbard might be tooled or painted. Fine swords were often passed down as heirlooms, and linked to the

Twelve axe-heads mounted on a wooden stick from Gjerrild, Randers, Denmark. The axe-heads are all of similar size and shape, each around 18–19cm long. They may represent the stock of a smith or trader, but they may also indicate standardized equipment within a military force. (John Lee/ National Museum of Denmark)



BORN TO FIGHT

Within some groups in Viking society, there seems to have been an expectation that all sons would be brought up as warriors, although this was probably not true of Viking society as a whole. The Persian geographer Ibn Rusta described Vikings in Russia in the early 10th century, including this note: "When a son is born, the father throws a naked sword before him and says: "I leave you no inheritance. All you possess is what you can gain with this sword"" (Lunde & Stone 2012: 126).

It is possible that this was a customary statement rather than a genuine expectation, because it contradicts other evidence about inheritance of land and other property within Viking society more generally. Nevertheless, it is consistent with accounts of the

importance of weapons as heirlooms, and the main embodiment of a warrior family's identity. There are also examples of graves containing the skeletons of children buried with adult-sized weapons. Whether or not they were presented with these weapons during their lifetimes is impossible to know, but the presence of such weapons in the graves clearly indicates some sort of identity with warrior status.

Egils saga, describing events in the 10th century but written 300 years later, tells the story of its hero Egil Skallagrimsson at the age of six borrowing an axe from a 14-year-old to kill a boy of ten or 11 after a quarrel in a ball game. Egil then expresses his wish to join a group of Vikings in order to travel and fight overseas (Jesch 2014: 53).

status and identity not just of the individual who owned the sword at a particular moment, but of the whole family. Swords often had individual names, both in mythology and in the historical sagas. These names might reflect something distinctive in the appearance of the weapon, such as the legendary *Tyrfingr* (probably indicating a blade that burned like pine-resin) to more prosaic names reflecting their purpose, such as 'Leg-biter'.

Axes and spears were typically plainer, but could also be elaborately decorated with chasing or inlay in precious metals or copper. This has led to some weapons, such as the famous axe from a grave at Mammen in Denmark, being regarded as 'parade' weapons rather than as function weapons. This ignores the fact that most decorated weapons were also perfectly functional, however, and that the decoration would not detract from their performance. Distinctive ornamentation could also have a practical function, enabling specific weapons to be located on the battlefield if lost, thrown, or temporarily discarded in combat.

Distinctive ornamentation probably also had a greater significance in relation to the social role of weapons. Visual display was an important element in perceptions of wealth and status in the Viking Age, and weapons along with jewellery and fine clothes provided a prime opportunity to display the status of the individual. Furthermore, status within Viking warrior society came not just from wealth, but from personal valour and achievement in battle. Having highly recognizable weapons and armour helped the actions of individual warriors get noticed in the press of battle, in a way that uniformity would not. Although much of the Viking poetry concerning warfare and combat describes battle in very general terms, many poems sing the praises of specific individuals, and to earn praise, one had to be noticed.

This was important for three reasons. First, on a purely material level, achievement earned wealth and rewards, whether in the form of loot, or rewards from a grateful lord. Second, it also increased status and recognition within society as a whole, with the wealth merely reinforcing a position based on reputation. Third, it continued to affect reputation after death. The Vikings had many gods, and as a diverse group of peoples



FAR LEFT

Tiny weapons like this have been found around the Viking world, but especially in Denmark. It seems likely that they were talismans, carried for luck in battle, or perhaps as symbols of devotion to particular warrior gods. The spear was associated with Odin, and the sword with Frey. (Pia Brejnholt/National Museum of Denmark)

LEFT

Scabbard chape with bird motif from Bjergene, Ballerup, Denmark, 10th century. Decorated scabbards made it easy to recognize individual weapons even when they were not in use. Decoration could include metal chapes and top-mounts, as well as tooled and painted leather on the scabbard itself. (Arnold Mikkelsen/National Museum of Denmark)

spread across a wide geographical area, those beliefs varied considerably, and there is no evidence to support the existence of a single belief system to compare to the formal teachings of other contemporary religions such as Christianity or Islam. Nevertheless, there is sufficient evidence in contemporary poetry as well as later literature to indicate that, as in other religions, many warriors believed that their afterlife depended on their actions during life. Only the finest warriors were chosen by the god Odin and his daughters the Valkyries ('choosers of the slain') for an afterlife in *Valhøll* ('the hall of the slain') in which the dead would fight every day and feast every night until the great battle at the end of time. In order to be chosen for Valhalla a warrior not only had to die in battle, but to attract the notice of the gods, and distinctive weapons were perhaps seen as a way of making achievements with those weapons visible to all.

While much of our understanding of Viking beliefs is speculative, and largely based on sources written down long after their conversion to Christianity, belief in some sort of warrior cult appears to be reflected in the use of amulets linked to weaponry and to the idea of *Valhøll*. Miniature metal weapons were either worn or carried, while a number of amulets survive from Denmark, eastern England and the southern Baltic which show a male warrior on horseback being greeted by a female warrior on foot (these are normally interpreted as warriors being greeted by Valkyries). Representations of Valkyries and *Valhøll* can also be found on Viking sculpture.

FEMALE WARRIORS

Historical evidence suggests that warriors were normally if not invariably male, and that female warriors were unknown. Later saga literature presents a slightly different view, however, as it features a number of female warriors, or 'shield maidens', although even there they are the exception rather than the rule. The problem with using these accounts is that not only are they late, but they tend to appear in 'legendary' sagas, which (even more so than saga literature in general) are normally regarded first and foremost as stories rather than as historical accounts.

Archaeological evidence suggests, however, that very occasionally women may have been warriors. Grave Bj 581 from Birka in Sweden contains a human skeleton, along with grave-goods including sword, axe, spear, armour-piercing arrows, fighting knife, two shields and two horses as well as riding equipment. This thus represents a relatively rare example of the full weapon set of the Viking warrior and has been cited in the past as a prime example of a male warrior grave. However, recent re-analysis of the skeleton shows that it was in fact a woman. Either all the assumptions made by archaeologists about the status of warrior

graves need to be reconsidered, or this woman was buried as a warrior. Female graves of this kind are still exceptionally rare, although an axe-head found in the grave of a 16- to 18-year-old woman from Bogøvej in Denmark appears to tell a similar story. Given that grave Bj 581 was wrongly identified for over a century as a male burial, however, it is possible that other graves may be reattributed in future.

It is notable that the Birka grave does not contain any objects indicating female dress, so while there is now no reasonable doubt that it is the grave of a woman, it is less clear that she was recognized as such in the time leading up to her death. Women have disguised themselves as men to engage in warfare across different periods and cultures, and that may have been the case here.

The subject of Viking female warriors remains controversial, and on current evidence it seems safest to say that they probably did exist, but that they were at best extremely rare, and that they may or may not have been open about their gender at the time.



Figurine of a warrior, armed with sword and shield from Galgebakken, Denmark. The hairstyle and length of the figure's gown or dress suggest that it represents a female figure. It may represent a Valkyrie, one of the 'choosers of the slain' sent by Odin to gather the best warriors to him ready for the great battle at the end of time. (John Lee/National Museum of Denmark)



Engraving of grave Bj 581 from Birka, Sweden, published in 1889. This grave has often been cited as an example of a well-equipped male warrior's grave, but recent analysis shows that the skeleton is in fact female. (Hjalmar Stolpe/Wikimedia/Public Domain)



Female figurine with sword and shield from Hårbjerg, Denmark. The figure may represent a mythical character, such as a Valkyrie, but it may be a more straightforward representation of a female warrior. (Arnold Mikkelsen/National Museum of Denmark)

Weapons may also have been sacrificed to the gods. A significant proportion of the Viking weapons known today come from bogs and rivers from which they can never have been intended to be recovered. In some cases the blades have been deliberately bent or broken to ensure that they could not be recovered and re-used.

Weapons also played an important part in the transition to the afterlife in the form of burial goods, and the majority of surviving weapons probably come from graves, although in some cases the original contexts are no longer recorded. Whether it was believed that the deceased would have the use of the weapons in the afterlife, or whether the weapons were selected as representative of the lifestyle or of the wealth of the deceased, it was clearly considered important to include appropriate weapons in the graves of some but not all Viking men, reinforcing the idea that warriors were only a segment of society, rather than representative of society as a whole.

What is less clear is whether it was always the warrior's own weapons that were buried with him. The idea of weapons as family heirlooms has already been mentioned, but the same sword could not both be buried with its owner and passed down to his son (although the legendary *Hervarar saga* does include the heroine Hervor entering the burial mound of her father, and forcing her undead father to give up his sword as her rightful inheritance). Because the dead do not bury themselves, the wishes of the heirs probably played a large part in what happened. It is possible that some weapons may have been created purely for the grave, along with other custom-made grave-goods. It has been noted that some Viking swords have grips so short that they would be impossible to hold safely, while metallurgical analysis of some of the supposedly high-quality Ulfberht blades (see p. 60) indicates that they were so badly made that they would have shattered on impact if used. This may mean that they were cheap imitations which were worn for effect, but never used, or they may have been made as substitutes for the grave, while the real Ulfberht blade passed on to another owner.

Sword and spearhead from Finstad Søndre, Hedmark, Norway. Both weapons have been deliberately 'killed' by bending, and in the case of the sword the blade is also broken. This symbolic destruction of weapons is found across the Viking world, and presumably had a ritual function, but the precise reasons are uncertain. (Museum of Cultural History, Oslo; photograph: Ove Holst/CC BY-SA 4.0)



TRAINING

There is very little evidence for how warriors trained with their weapons, or for how early this training took place. A distinction probably needs to be drawn between training for fighting in formation, and training for fighting as an individual. Fighting effectively in close order requires practising along with other members of the same unit, both in terms of responding immediately and in a coordinated fashion to commands, and in using weapons in the physically constrained circumstances of a battle line. Without training as part of a unit, a warrior in the shield-wall (see p. 42) might be more dangerous to his own side than to the enemy.

Experience from modern re-enactment suggests that only a relatively basic drill is needed to form a shield-wall and maintain it while moving backward or forward, and no more than a few hours' training is required to make this effective for re-enactment needs. Making it effective for both attack and defence under combat conditions would require considerably longer, however, as would the ability to maintain formation for more-complicated manoeuvres. It seems likely that formal training would begin as soon as a young warrior had access to a large-enough unit to practise with, and that even experienced warriors would continue to drill together to maintain cohesion.

Even before formal training began, however, quite young children may well have gained familiarity with drill procedures through observation and imitation. The author has on several occasions observed children of no more than four or five years of age going through shield-wall drill with miniature wooden weapons and shields in a re-enactment camp, responding to commands from a child only slightly older, without direct adult input, but imitating exactly the drill carried out by the adult combatants within the group. Given the tendency of children generally to imitate adult behaviour, there seems no reason to doubt that this took place in the Viking Age as well.

Training in handling weapons as an individual probably also began at a relatively early age, and examples (although rare) are known of weapons too small for adult use, but not for children. As in other periods, wooden training weapons probably formed a first step before progressing to first blunt then sharp metal, but such weapons would not normally survive in the archaeological record. Such training probably often took place within a family context, with fathers training their sons, or other adult members of the family taking on that role if the fathers were dead, or away on campaign. In the case of the 'great armies' of the late 9th century, when Viking forces campaigned in hostile territories for years on end, taking their women and children with them, many children must have spent much or all of their childhood in military camps. It is possible that in such an environment more formalized training of children and youths took place, as such camps were vulnerable to potential attack at any time, and some ability to defend themselves, and to respond to commands, would have been useful for anyone in the camp.

The great Viking armies represent a special case, but according to later saga evidence, it was not uncommon for boys within Viking society to accompany adults on raids as soon as they got into their teens. Skeletons

from a mass grave found near Weymouth in Dorset, buried in the decades around the year 1000, and plausibly identified as the crew of a single Viking ship, included a number of individuals in their early teens at the time of death, with the bulk being in their later teens and twenties, and only a limited number of significantly older men among them.

WARFARE AND COMBAT IN THE VIKING AGE

Weapons were widely used in the Viking Age, but not always in the context of warfare. There were many different situations in which combat might occur, in addition to hunting, in which spears, bows and knives might also be used. Different combat scenarios reflect different levels of violence, and different levels of weapon use, but they should be seen as existing on a sliding scale with areas of overlap rather than as a series of steps of absolutely distinct activity.

Formal warfare may be seen as the top end of combat, involving the largest numbers of men, probably the greatest variety of weapons, and the highest level of training with those weapons. This was largely restricted to professional (if not necessarily very experienced) warriors, although it might also involve the use of levy troops who were less well armed and trained. Below this came the archetypal Viking raiding and piracy, and the need to defend against it. Although the typical image of Viking raiding involves the Vikings attacking others, it is important to remember that raids also took place within the Viking homelands, and that the expansion of seaborne trading across the Viking world also provided an increased volume of potential prey for pirates. Finally, there are various forms of violence which might take place within a civilian environment, involving two or more protagonists, ranging from casual brawls, through family feuds to judicial duels.

Within warfare itself, there was an expectation that all those involved had weapons, and knew how to use them, although both the level of weaponry and experience might vary considerably depending on circumstances. Warfare was also the form of combat in which it was most likely that fighting in formation would take place. As discussed in more detail below, while this did not require complete uniformity of weaponry, it did require some planning with regard to which weapons could be used effectively depending on the individual warriors' places within the formation, and potentially the use of different weapons in combination by the unit as a whole. Warfare would also normally involve some structure of command, and with it the use of weapons within the context of specific tactics on the battlefield, with battles in turn being seen within the context of a wider campaign strategy, whether that strategy was based around a single battle or many.

Raiding might be as structured and disciplined as warfare, and might also be carried out by professional warriors, but this need not be the case. Many of the earliest recorded raids are on coastal monasteries, such as Lindisfarne in Northumbria, or Iona in western Scotland. These targets were carefully selected on the basis of familiarity with coastal sailing

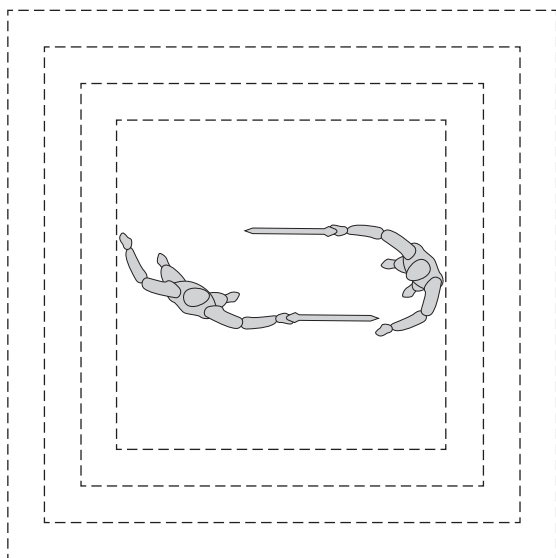
routes, and were chosen because they were vulnerable to surprise hit-and-run attacks, contained significant portable wealth in the form of precious goods and slaves, and were typically poorly defended. (While there are records in Anglo-Saxon and Irish sources of warriors retiring to monasteries, most monks had little or no military training and were unarmed.) It follows that as long as raiding parties were armed and had at least a basic knowledge of how to use their weapons, they did not need to be highly skilled or trained warriors, and combat was likely to be somewhat ad hoc in nature rather than requiring battlefield formations. The same would apply to some extent to recorded attacks on trading centres, trading ships or rural areas, although a slightly greater level of opposition might be expected from the general population, some of whom would also have weapons and familiarity with their use. Opposition in these circumstances was probably also ad hoc and unstructured unless either some sort of defending force was in place, or sufficient warning was received to organize defensive levies. In either instance, or in the case of raids on fortified and garrisoned towns, the distinction between raiding and warfare would become more blurred.

The distinction between raiding and civilian combat could also be blurred. The sagas of the Icelanders contain many instances of conflict between neighbouring families, or between different branches of the same family. These are primarily conflicts between landowning farmers, supported by family members, employees and slaves, and often include small-scale raids on neighbouring properties. In other cases violence seems to have been more spontaneous, with quarrels turning violent at feasts, at meetings of law assemblies, in the course of commercial transactions, or during disputes. Depending on the level of premeditation, these conflicts might involve whatever tools or weapons came to hand, or one or more men arming themselves deliberately in the expectation of violence. It is likely that some landowners, and some of those in their households, would have gained some military experience, but there is nothing to suggest that the bulk of the rural population would have spent much time training and drilling together, and combat of this sort was probably more typically a series of individual hand-to-hand engagements rather than anything involving fighting in formation.

The exception would be those landowners who combined farming with raiding, and/or with occasional service in the *hirð* of a greater lord. *Orkneyinga saga* is the story of the earls of Orkney, but a major character in the latter part of the saga was the chieftain Svein Asleifarson. He appears at various points as a warrior in the following of various earls and engages in raiding both on neighbouring chieftains and on traders outside the bounds of the earldom of Orkney, maintaining a large number of followers of his own through the profits of his raiding, but relying on having such a force to make his raiding effective. The saga also relates his annual routine: planting out the crops, going on his spring raiding expedition, returning to take the harvest in before going on his autumn raiding expedition, then feasting over the winter before beginning the cycle again. Svein Asleifarson lived in the mid-12th century, after the conventional end of the Viking Age, and *Orkneyinga saga* was compiled

An early single-edged sword from Støveren Søndre, Buskerud, Norway. Both single- and double-edged swords were used by the Vikings, but while double-edged swords remained in use throughout the period, single-edged swords became rarer after the 9th century. (Museum of Cultural History, Oslo; photograph: Eirik Irgens Johnsen and Ove Holst / CC BY-SA 4.0)





Layout of *hólmgang*. The central area was around 3m square, with three outer squares each about 30cm wider on each side. Initially, both combatants were permitted three shields and a separate shield-bearer, and could use the outer squares. Once the shields were destroyed, the shield-bearers would retire, and combat was limited to the inner square. In both cases there was very little room to move within the permitted space, but stepping beyond the boundary meant defeat and judgement in favour of the victor.

OPPOSITE

Carving of two swordsmen from Etelhem, Gotland, Sweden. The swordsmen have no shields, and are accompanied by a third figure that is unarmed. This does not appear to be a typical battle scene, and perhaps represents the final stages of a *hólmgang* or some other form of judicial combat, with an observer to adjudicate on the outcome. (Per Widerström & Johan Norderäng)

a relatively short time after his death, so it is somewhat more reliable at this point than other saga evidence, but it seems likely that other chieftains must have enjoyed a similar lifestyle within the Viking Age itself.

A final important area of civilian combat is combat in the context of legal disputes. Within a variety of law codes, violence could be a legal means of redressing disputes and grievances. Especially if violence had already been used, the victim of the violence (or a family member) could seek retribution rather than compensation, but this could in turn result in further rounds of tit-for-tat retribution, on occasion developing into feuds lasting across several generations. In practice there was little regulation of precisely what form such retribution might take, and

feuds could result in large-scale and uncontrolled violence.

One means of containing the violence in feuds, or of resolving disputes before they reached that level, was the judicial duel. Two types of duel are recorded: *einvigi* and *hólmgang*. *Einvigi* ('single combat') was simple and effectively unregulated. It could take place anywhere, with any weapons, and did not require a judge. As such it was no different in its form from any other individual hand-to-hand combat.

By contrast, *hólmgang* was highly regulated, although the precise details apparently differed between different regional law-codes, and required very specific styles of fighting unlikely to be replicated in battle. The name *hólmgang* literally means 'island-going', and while such duels did not always take place on islands, the name reflects the fact that they took place in a restricted area. The most detailed account of *hólmgang* is found in *Kormáks saga*, but similar accounts are found in other sagas. According to *Kormáks saga*, the two combatants must fight on a cloak 5 ells (around 3m) square. Around this were three furrows, each around 30cm apart, thus extending the square to around 5m in total. Each corner of the outermost square was marked with a hazel post (or a stone in other accounts). Each combatant was permitted three shields, but had to defend himself with weapons alone once the third shield was destroyed. Rather than the combatants fighting with a weapon in one hand and shield in the other as in normal combat, however, each combatant had an unarmed shield-bearer to hold the shield for him, who would retire once the third shield was destroyed. A further departure from normal combat was that the two combatants would strike alternate blows, with the person challenged having the right to strike the first blow.

The combat might end with submission, injury or death. If either combatant stepped outside the outermost square while the shields were still in use, however, or off the cloak once the shields were gone, he was considered the loser, and judgement in the dispute would be in favour of the victor. As a recognized legal process, the winner could expect the



backing of the wider community in upholding the legality of the result, and the loser (or his surviving family if he was killed) had no legal redress against the outcome, as long as the rules were followed.

This style of combat differs from normal combat in three significant ways. The first is the constraint of fighting in such a limited area, much like fighting within a modern boxing ring or fencing piste. With the length of a weapon added to the reach of an arm, a single step would use up the whole of the inner 3m square, meaning that there was very little scope for movement. While the larger square offered slightly more space, it was also necessary to accommodate the two shield-bearers within the space, so again space was very much limited. The use of shield-bearers was also distinctive, because it meant that their defensive skills were as important as the offensive skills of the combatants in determining the outcome, and combatant and shield-bearer had to operate effectively as a team. This would be difficult without specific training, although it has some parallels with the way in which the front and rear ranks of a shield-wall probably operated (see p. 42). Finally, the alternating blows were probably unique to this form of combat rather than something that would be found in battle or in other less regulated forms of conflict.

SPECIALIST vs MULTI-PURPOSE WEAPONS

Most weapons in the Viking Age were multi-purpose, used in combat in a variety of ways and a variety of circumstances, while some were equally suited for use in hunting and combat. Nevertheless, within the main weapon types, a few varieties seem to have been developed for specific purposes.

Modern replica of an 'armour-piercing' socketed arrowhead. The narrow shape, later known as a bodkin, was ideal for piercing between the rings of a mail shirt, but also had greater penetrating power through wood or metal than the more common leaf-shaped arrowheads. (Author's collection)



The most common form of arrowhead in this period had a leaf-shaped head with sharpened edges. This was designed to cut into flesh, and its breadth meant that it would cause a substantial wound. The breadth and the relatively gentle taper meant, however, that the leaf-shaped head had limited penetrating power if it encountered resistance. It was a general-purpose arrowhead, suited both for hunting and warfare, as long as the opponents on the battlefield were not particularly heavily armoured. When used in conjunction with the power of the larger bows of the period (see p. 22) it would penetrate a shield, but probably not at a great distance, and it was unlikely to cause much damage through the combination of mail and padding, or through a metal helmet. As a result, the period saw the increasing use of a new type of arrowhead, of square or triangular section, tapering sharply to a point. The narrow shape and sharp taper meant that it could penetrate between individual rings in mail, splitting them apart in the process, while the same shape could also penetrate a helmet or shield boss, as well as losing less of its force when punching through a shield. These 'armour-piercing' arrowheads were thus an effective response to the increasing use of armour during the course of the Viking Age.

Spearheads could also be narrow and sharply tapered, or broader. As with the arrowheads, a broader blade on the spearhead would inflict a larger and potentially more serious wound. The added weight of a larger spearhead would also lend momentum and thus more power to the thrust, so large, heavy spearheads were effective for thrusting, and could deliver a substantial and highly concentrated impact whether or not they penetrated the body through shield and/or armour. The shape and weight of such a spearhead meant it was not particularly aerodynamic, however, and poorly suited for throwing, while again its taper was less than ideal to penetrate armour. Longer, narrower spearheads were more aerodynamic, and thus suited for throwing, but their sharp taper meant that they were also well suited for forcing through the rings of mail, so the penetrating power of this shape made them effective armour-piercing weapons whether used for throwing or thrusting.

The large axes of the late 10th and 11th centuries could deliver a devastating impact, but they required space to use effectively, and while the shaft could be used to block blows, and even to strike with the butt-end as well as the head, the axe-wielder was vulnerable to counter-attacks from smaller, faster weapons, as well as to missiles. It seems likely that such axes were developed for specific purposes; and because their development coincided with the widespread appearance of stirrups in weapon graves in southern Scandinavia, it seems likely that they were developed as anti-cavalry weapons, as the impact that they could deliver would be sufficient to kill or maim a horse with a single blow. They could not be used flexibly in formation because of the space required to swing them, but they had the force to smash through a shield-wall, and this is another possible function which might explain their development. In either case, the axe-man may have been partnered with another warrior with a shield to protect him until the moment came to strike.



Spearhead from Rør, Hedmark, Norway. The head is large enough to make an effective thrusting spear, but slim enough that it could also have been used for throwing. (Museum of Cultural History, Oslo; photograph: Ove Holst/CC BY-SA 4.0)

FIGHTING IN CLOSE FORMATION

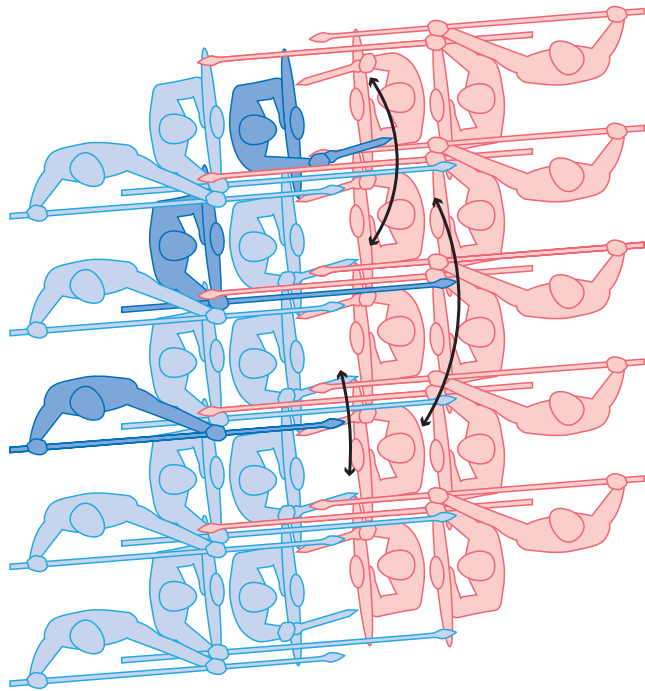
Although few detailed accounts survive of Viking battles, those that exist suggest that it was normal to fight in close formation. This is reinforced by a number of stone carvings which appear to show ranks of men with overlapping shields, suggesting that they stood close together. These representations have been linked to written references to the *skjaldbjorg*, normally translated as ‘shield-wall’, although the literal meaning is closer to ‘shield fortress’. Exactly how this worked is very much a question of interpretation, and reconstructions often seem to be based on the Roman *testudo* (‘tortoise’), in which the shields provided a solid wall, and if necessary a solid roof against missile attacks.

Such an approach is not impossible with Viking shields, but it would be a purely defensive formation and of limited value. Round shields are less well suited to this than the oblong shield of the Roman legionary, providing no protection for the head or lower legs if used in a normal position, while the shields would need to overlap considerably to avoid gaps. This type of shield-wall could only function effectively if the front rank knelt, while the second rank provided an upper row of shields, and a third rank would be needed to provide a roof. This would require all three ranks to be closely packed together, and neither the front rank nor the second rank would have much scope to move. The warriors would be vulnerable to spears and arrows piercing through the shields, and would have little scope to respond if a missile attack was combined with a direct assault. It should be noted, however, that neither the written sources nor the illustrations appear to describe or depict this interpretation of the shield-wall formation. This interpretation has become popular in re-enactment displays, and provides an effective defence against rubber-tipped arrows, but it is debatable whether it would have been so effective in real combat.

The shield-wall as portrayed in contemporary illustrations shows a single rank of overlapping shields, leaving the legs and heads of the warriors holding them unprotected. The shield is held by a single grip in the centre behind the boss, but in this formation could also be braced by the forearm and/or shoulder of the arm holding the shield. If all the shields in a shield-wall are braced like this, it provides a solid wall, with the mutual reinforcement able to withstand much more pressure than an individual man, while at the same time the overlapping shields mean that there would be a double thickness of protection for the arm and shoulder immediately behind the shield, except for the person at the end of the shield-wall. While this rigid shield-wall provides a solid defence against a charge, however, it also makes it difficult to raise or lower individual shields to defend head and legs as necessary, either against blows or against missile attacks. A slightly looser version of the same formation, without the shields so tightly braced, therefore seems likely to have been the norm during battle.

Assuming that the warriors maintained a close formation, this has implications for which weapons could be used, and how. It is here that comparison with Roman fighting techniques is perhaps more useful. Roman legionaries fighting at close quarters were armed not with a long

sword, but with a *gladius*, or short-sword, which was primarily a thrusting weapon, requiring a minimum of space between the individual soldiers in a line. Although it is often viewed only as a secondary weapon, the Viking *sax*, or fighting knife, was ideal for the same function within the shield-wall, as it required little space to wield effectively as a thrusting weapon through the angle of overlap at the top of the shields, while the round shape of the Viking shield meant that there was also room to use a fighting knife in the similar overlap below the shields. Longer weapons such as swords or axes could only be used in the front rank close to vertically, with a very narrow angle of swing to either side, while if there were further ranks behind, there was little space for a back-swing to gain force for a blow without risking striking the warriors behind. Neither swords nor axes could be used very effectively in this position, but the fighting knife was ideal for it, so while it cannot be proven that the fighting knife was the primary weapon in the front rank, it seems likely. Swords and axes would come into their own if the line spread out more, allowing more lateral movement for the weapon arm, or in open combat (see p. 50).



Weapons in use from the first three rows of a shield-wall. The arcs show the amount of lateral movement available from each position without striking other members of the shield-wall. Each warrior had room to strike at more than one opponent, but the cramped conditions meant that there was little room for lateral movement for thrusting weapons, or to swing swords or axes.

Vikings in battle, mid-10th century (overleaf)

Two opposing shield-walls approach each other to fight in close order. Within this formation, the spear is the principal weapon. On the left of the scene, archers seek to disrupt the opposing shield-wall by loosing arrows into the enemy's midst. Many of the warriors have only padded armour rather than mail, and the longbows of the period were heavy enough to penetrate this. Shields and helmets offered some protection, although these could also be pierced by arrows, but paying attention to the arrows is a distraction from the direct threat of the advancing shield-wall. On the right of the scene a small number of mounted warriors are moving to turn the flank of the opposing shield-wall, again with the hope of causing the formation to collapse, but the horses are unable to attack the shield-wall effectively from the front. A small group of warriors has advanced to block the flanking movement, and some of these are armed with the large double-handed axes characteristic of the late Viking Age. This type of axe may have been introduced particularly for use against horses, as shown here. Some of the warriors wear helmets with spectacle-shaped eye-guards. These helmets were already old-fashioned by the mid-10th century, and conical helmets with nasal guards were becoming more common.







The short sax, or fighting knife, was ideal for use in close formation, as it could be used to great effect without significant movements. This well-preserved example is Anglo-Saxon rather than Viking, but similar weapons were also used by the Vikings. (© The Trustees of the British Museum)

Assuming that the shield-wall often comprised two or more ranks, spearmen in the rear ranks were in a position to thrust through the gaps between the heads and shoulders of the warriors in the front rank. With a typical spear length of 2–3m, a spearman in the second rank could reach both the front rank and the second rank of an opposing shield-wall, and possibly even further, while a spearman in the third rank could reach the opposing front rank. The effective use of spears in this way also depended on having some space for lateral movement, as the greater length of the spear meant that even if it was extending through a relatively narrow space between two heads, this would become a wider cone of space in which the spearhead itself could move, meaning that at any moment a spearman could potentially threaten at least three or four different combatants in the opposing shield-wall. If the space between heads and shoulders was cluttered, however, the spear could not be used so effectively, and this is a further argument for the use only of short weapons in the front rank.

Spears are not the only weapons which could be used from behind the front rank. Long-handled axes could also be used through the gaps in the front rank, but whereas the spear requires relatively little in the way of a backward movement in preparation for a thrust, large axes require a back-swing to gain momentum. This would not be possible if there were multiple rear ranks and these were closely packed. Similarly, swords wielded by warriors in the second rank would also reach the opposing front rank, and because the wrist is flexible, if a warrior in the second rank reached forward on a cut so that his wrist was level with or forward of the heads of the men in front of him, the triangle of space in which a vertical cut could land would be even wider than that of a thrusting spear. Again, however, the back-swing needed to put force behind a cut would make this a dangerous movement if the rear ranks were tightly packed.

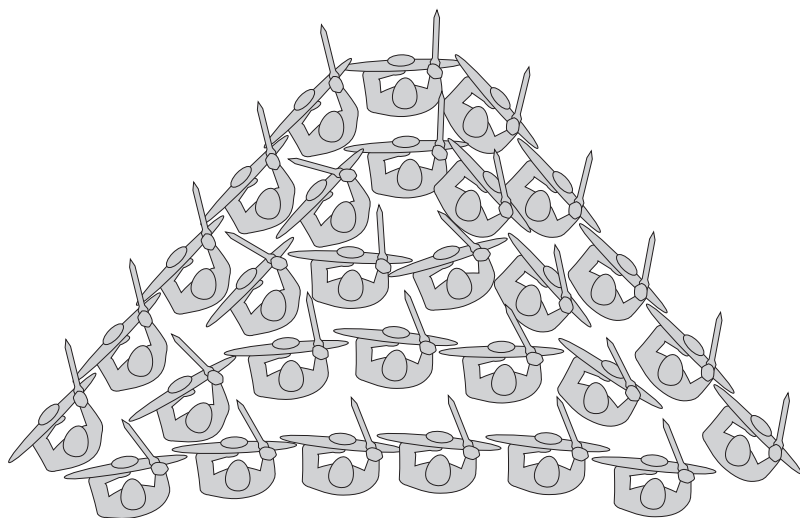
If the opposing shield-walls were close enough for fighting knives to be effective, or for weapons to reach through from the rear ranks, warriors in the second rank were also vulnerable to attack from the opposing side. Like swords, spears can be used single-handed, and it is likely that many if not all warriors in the second rank also carried shields, not least because they might need to step forward to fill gaps if warriors in the front rank fell. If they were pressed forward against the rank in front to gain maximum reach with their own weapons, however, this would limit their ability to move their shields quickly to defend themselves. Accordingly, the warriors in the front rank of a shield-wall had to concentrate not only

on defending themselves, but on defending those behind them. To be effective, the shield-wall required each warrior to have good awareness of those around him, including those in front or behind (depending on which rank he was in) as well as to either side. It also required the warriors in the different ranks to work together, coordinating their movements and anticipating those of their comrades rather than simply fighting as individuals.

The other formation mentioned in literary sources is the *svínfylking* ('swine formation', more usually translated as 'boar-snout'), detailed accounts of which are only found in sources of the 12th century or later. Contemporary accounts of warriors attacking 'in the manner of a boar' may possibly refer to this formation, but may also just be using the boar as an image to express the strength and ferocity of the attack. Parallels to the boar-snout are found in late Roman military manuals, however, and given the apparent Roman influence on the development of Viking weaponry, it is not unlikely that Roman practices also influenced the ways in which those weapons were used.

The boar-snout was essentially a wedge-shaped version of the shield-wall, with one or two warriors at the front forming the 'snout', and the shield-wall to either side angled back. The space within this would then be filled with further angled ranks, to create a solid wedge of men, with each rank of shields directly supporting and reinforcing the rank in front. In this formation, the shields would be as tightly locked together as the ranks of men, as the shield-wall itself was the primary weapon, supplemented by whatever weapons the individual warriors were wielding.

The boar-snout was used as a human battering-ram to break through an opposing shield-wall. Once formed, the formation would charge the opposing shield-wall at speed. The tightly locked shields formed a solid wall along the flanks, and if the rear ranks were packed closely behind the front rank, the momentum would help to push the front of the



The 'boar-snout' or wedge is a variation on the shield-wall probably derived from Roman military tactics. Advancing at speed gave the solid wall of shields the momentum to punch through an opposing shield-wall.





Sea battle, c.900 (previous pages)

This sea battle is essentially very similar to a battle on land. The ship in the foreground is being attacked by the ship beyond it, which has pulled alongside, and fastened on with grapples, and the warriors from the second ship are boarding over the side to engage in hand-to-hand combat. The circumstances do not lend themselves to an organized shield-wall, so the warriors are fighting on a more individual basis, mostly armed with swords, axes and knives, all of which are suited to open combat at close quarters. Only a few of the warriors wear mail. This is also because mail was an expensive luxury, but also because even those who owned it might choose to avoid wearing it on board ship, as the weight made drowning inevitable if they went overboard. In the attacking ship, archers have been placed in the prow and stern, using the added height to their advantage. The defenders are currently using their shields to protect their heads, but this leaves them vulnerable to direct assault from the boarders. This scene takes place on one flank of the battle. In the background a group of ships have been lashed together side by side, forming a larger and more stable fighting platform for combat.

wedge forward into and through the opposing shield-wall; and if the successive ranks of the shield-walls were sufficiently well locked together, those in front would continue to be carried forward even if killed or wounded.

To be effective the boar-snout required everyone to move at the same speed, and not to break formation, so it required even greater coordination and shared discipline than the normal shield-wall. Those in the outer ranks probably also used their weapons to strike at the moment of impact, but the concentration required to maintain the formation until the boar-snout had broken through the opposing shield-wall meant that the use of hand-weapons must have been secondary.

Once the opposing line was broken, the boar-snout would no longer be a particularly useful formation. It would be followed up by other attackers to exploit the breach that it had made, while the warriors who had formed the boar-snout would presumably either re-form as a shield-wall facing back towards the rear of the opposing force, or would attack that rear in loose formation.

The shield-wall and the boar-snout are the only formations recorded specifically from the period, but there must have been many other variations. Anglo-Saxon accounts suggest that it was not uncommon to form up in two or more formations, which would function independently, and a shield-wall could be deployed in a curve or at an angle rather than just as a straight line, in order to protect flanks, or to reflect the constraints of particular terrain. Other possible combinations include using a smaller shield-wall to protect a warrior with a double-handed axe as an alternative to the boar-snout to break an opposing shield-wall, or to shield archers firing at close range, which with the recorded draw-weight of Viking bows (see p. 23) could have had a devastating effect. In the absence of clear historical or archaeological evidence, however, such formations can only be speculation.

FIGHTING IN LOOSE FORMATION

Fighting in loose formation allowed all of the different weapons to come into play, and placed more emphasis on the weapon-skills of the individual warrior, although there was still a place for warriors fighting in combination in open-order combat. The shield-wall could also function as a loose formation, permitting more freedom of movement for the larger weapons, but still requiring warriors to work together to protect each other and to coordinate their attacks. Both on the battlefield and in other combat situations, though, there must have been occasions when warriors fought in open space rather than in formation, and in this situation the strengths and weakness of different weapons become more apparent. With all of the weapons concerned, however, fighting in open order meant that freedom of movement could be used to change distance and the angle of attack, while delivering a blow while stepping added to the weight and the momentum of the blow.

The spear can either be used in one hand, with a shield in the other, or with two hands. Combining spear with shield gives the warrior the added protection of the shield, but the balance of the spear when used single-handed means that it must be held towards the centre of the shaft to maintain control, in which case much of the advantage of its length is lost, while a single-handed thrust is also less powerful than double-handed. Used double-handed, the protection of the shield is lost, but the user has much more control of the spear in contact, and can make more use of the length, and of the more powerful thrust. The spear is primarily a thrusting weapon, but used double-handed it doubles as a staff, and both the side of the shaft and the butt-end can be used to deliver blows. The shaft can also be used to deflect blows from other weapons, and unless the shaft is reinforced, deflection rather than blocking is the most effective way to use a spear to defend against an edged weapon such as a sword or axe, which might cut all or part of the way through the shaft if it is used to block.

Most forms of Viking spearhead have an edge as well as a point, so it is also possible to deliver a slicing wound by moving the spearhead either forwards or backwards along the target area rather than thrusting into it, although a straight thrust is capable of delivering a very powerful and concentrated blow. The length of the spear means that when used outside the physical constraints of close-order combat it can be used to attack any part of an opponent's body, including extremities such as the head and lower legs which are hard to defend effectively. It is quick to change direction, and the ability to move quickly between high and low attacks enables the user to take advantage of the limited defensive coverage of the shields and armour of the period.

Because it is necessary for the spearman to maintain a good grip on his weapon except when using it as a missile, the reach of a spear is less than its full length. This means that a sword, combining the length of the blade with the length of the sword-arm, has almost as long a reach at full extension as all but the longest spear, while it has much greater flexibility in the direction of attack, as fingers, wrist and elbow can all be used to change the direction of the blow mid-attack. While the weight of a Viking sword means that it is not possible to change direction with fingers or

Sword from Sjørring Volde, Thy, Denmark, early 9th century. It combines a Frankish blade with a Scandinavian hilt. (CC BY-SA 2.5/ Roberto Fortuna/National Museum of Denmark)



wrist as subtly as with later, lighter weapons, and especially not as easily as modern fencing weapons, the tapering blades and heavy hilts mean that Viking swords are in fact extremely well balanced, and can be used for much more sophisticated swordsmanship than the crude chopping that many people assume is all that they can deliver.

The reach also means that the sword can be used to defend any part of the body, including the feet, either used in combination with a shield or by itself. Modern re-enactment combat often features swordsmen or -women blocking each other's blows edge to edge, which is not a significant problem with weapons already blunted for safety, but which would quickly blunt the edge of a sharp weapon. Used for blocking a sharp sword needs to be slightly angled to protect the edge, as blocking with the flat of the blade is weaker, because this aligns with the natural bend of the wrist.

The fact that the swords have sharp points and either one or two cutting edges means that they can be used both as cutting and thrusting weapons. Modern re-enactment combat tends to minimize the use of the thrust, but that is as much because it is less visually engaging than the cut, and because it is harder to pull the force of the blow safely while still making contact, than because the thrust is ineffective. Like the spear, the tip of a sharp sword can deliver a powerful and concentrated penetrating blow. Swords can also be used as cutting weapons, however, and the fact that most blades were double-edged means that it is possible to cut with both the leading edge and the back edge. While it is easier to deliver a forceful cut with the leading edge, the back edge is effective for slicing blows, and these are particularly useful at close-quarters either for a blow wrapped round the back of the opponent's head and shoulders, or for a back cut at the back of the thigh or calf. The latter action would probably not be a killing blow, but could disable, making it impossible for the opponent to continue to fight.

The principles of leverage mean that maximum force can be delivered with a cut delivered with the edge close to the tip of the sword, suggesting that fighting at a distance would be advantageous to a swordsman, especially when fighting against a shorter weapon such as a hand-axe or knife; but a cut can be delivered with any part of the blade if the distance is closed, and the heavy pommels on most Viking swords mean that is possible to strike with the pommel as well as the blade at close quarters. All swords of the period are single-handed, but experimentation shows that it is possible to support the sword-hand or the pommel with the hand to provide extra power either in delivering or blocking blows.

The axe is used to deliver a concentrated blow, using the weight of the head to maximize impact. Like spears, the shafts of large double-handed axes could also be used either offensively or defensively. The relative size of the sockets shows that the shafts of these axes were thicker than typical spear shafts, and could be used to block as well as to deflect incoming blows. Most axes were designed for single-handed use, however, and were mounted on lighter shafts, so blocking with the shaft was riskier. Experimentation suggests that reinforcing the leading edge of an axe-shaft with leather or rawhide adds significantly to the strength of the shaft

without adding much to the weight, although it is unclear whether this technique was used by the Vikings themselves. As with the spear, there is a trade-off between reach, force and control, depending on where on the shaft an axe is held. The further away from the head, the longer the reach and the greater the force in the blow, but also the least control, and the least ability to change the direction of the blow effectively mid-swing, or to pull the blow and recover balance if it is clear that it is not going to land successfully. A grip further up the shaft gives more control, but necessarily reduces both reach and power. It is possible with both single- and double-handed axes to slide the grip on the shaft in use, including in the course of striking, but there is a risk of losing control of the axe altogether in doing so if the axe is wet or slippery, or if it makes contact with another weapon or shield too early.

The axe relies on momentum, so it is at its most effective when being used in open space, with room to swing in any direction. A back-swing can be used to gain force, and rather than beginning a fresh swing for every blow it can be effective to keep the axe moving constantly unless it reaches a complete stop in or against the target area. This allows the follow-through from one blow to become the beginning of the swing for the next, maintaining maximum momentum with the minimum of force.

In addition to striking, the axe can be used for hooking other weapons or shield rims, especially if the axe has a protruding 'beard' at the bottom of the head. This is only effective, however, if done with momentum, while keeping good control of the axe. Otherwise there is a danger of the opponent pulling and taking control, either pulling the axe-man off-balance if he holds on to the axe, or disarming him if he does not.

The fighting knife, although effective at close quarters and in the constraints of close formation, is less effective in open combat except against an opponent armed with the same type of weapon. The lack of a cross-guard means that parrying or blocking with the knife risks drawing a blow onto the vulnerable fingers, while the short reach of the knife puts its user at a disadvantage against longer weapons; and if the opponent keeps his shield away from his body, it is difficult to reach around it with a knife to thrust or to cut at anything vulnerable without putting the hand and forearm of the knife arm at risk. Where the knife can be effective in open combat is against a much longer weapon if the knife-user can get inside the reach of that weapon and continue to close the distance so that the larger weapon cannot be used; the knife can then be used either to thrust or to cut at close range. This presupposes, however, that the user of the larger weapon permits that to happen.

While the shield in a shield-wall is used relatively passively in defence, and even in the boar-snout relies on the flat of the shield to provide a solid wall of force, the shield can also be used more fluidly and proactively. Experimentation suggests that, given room to move, the shield is far more effective when not held flat across the front but angled forward. A number of commentators have noted that in this position it is possible to use the shield not simply to block a blow, but to deflect it away long before it gets



Sword-cuts in the rim of a reconstruction shield which has been reinforced with leather facing and a rawhide rim. A shield used dynamically to deflect blows rather than simply blocking them would receive less damage with each blow, and would therefore survive longer in combat. (Rolf Warming, Society for Combat Archaeology)

Head from a throwing spear, late 9th or 10th centuries, found in the River Thames. The slender shape and sharp point make it aerodynamic for throwing, while the copper and silver inlay on the socket would have made it easy to recognize at the end of the battle. (© The Trustees of the British Museum)



close to the body of the person defending the blow, whereas the same blow might either smash through a shield held flat, or drive it back into the body, and particularly into the face. By extending the edge rather than the face of the shield forward, it is possible to deflect the incoming blow to either side, forcing the attacker off-balance. Especially in the case of a knife or short axe, this also has the potential to injure the hand of the attacker and/or disarm him, while both the edge and the boss of the shield can also be used for powerful counter-strikes, especially to the vulnerable inside of the weapon arm. Controlled tests by archaeologist Rolf Warming also show that using the shield in this way to defend by deflection rather than by passive blocking reduces the damage done to the shield in the process, prolonging the time during which the shield remains useful in combat.

Once a shield was lost, a second weapon might be used as a substitute, but two-weapon fighting is not a feature either of contemporary written accounts or of pictorial evidence; and while various weapon combinations can be effective with training, there is little or no evidence to suggest that this approach was used, although the lack of detail in most contemporary accounts means that it cannot be ruled out either.

MISSILE WEAPONS

The importance of missile weapons in the Viking Age tends to be downplayed. This is in part because they are less dramatic, and feature less both in contemporary poetry and later saga narratives, and partly because arrowheads tend to be less common in weapon graves than other weapons. This last fact may say as much about burial practice as it does about use in battle, and the power of the known Viking longbows meant that they were potentially a potent force in combat. In addition to archery, throwing spears are certainly recognizable in the archaeological record, while some smaller axes may also have been used as throwing weapons. Contemporary poems by the Vikings and the Anglo-Saxons make it clear that missiles certainly were used in battle, but not necessarily how. Thus, for example, the Anglo-Saxon poem *The Battle of Maldon* suggests an exchange of missiles between Anglo-Saxons and Vikings in a historically documented battle which took place in August 991.

Where arrows and throwing spears do tend to be mentioned is in the context of a 'storm' of missiles. This seems to have been common at the beginning of battles, but was not confined to that stage of the battle. While the shield-wall provided a strong defence against a charge, either on horseback or foot, it also presented a static target for missiles. Just as in the 18th and 19th centuries the infantry square was effective against cavalry as long as the lines were maintained, but could be broken by artillery, so the shield-wall was vulnerable to missiles, as bows had the power to punch arrows through shields and armour. Missiles could therefore be effective in disrupting a shield-wall before battle was joined, but could continue to be used over the heads of one's own troops once an



attack had begun, forcing those in the rear ranks to concentrate on avoiding missiles or protecting themselves rather than actively participating in the battle.

Missile weapons may also have been used specifically to target opposing leaders, as there are a number of accounts of leaders being killed or wounded by arrows or throwing spears. At the battle of Maldon, the Anglo-Saxon leader Byrhtnoth was ‘severely wounded’ when ‘one of the Danes impelled a dart from his hand, made it fly from his fist’ (Scragg 1991: 25); this is probably a reference to a throwing spear rather than an arrow. Byrhtnoth was subsequently killed in hand-to-hand combat, but a severe wound would obviously have impacted on his fighting abilities. At the battle of Fitjar in c.961, the Norwegian king Håkon the Good was fatally wounded by an arrow or throwing spear (the wording of descriptions is ambiguous), while at Stamford Bridge in 1066, King Harald Hard-Counsel of Norway was said in later saga tradition to have been killed by an arrow. At both Maldon and Stamford Bridge the death of the leader led to the defeat of his army, and while Håkon survived long enough to win the battle at Fitjar, he died of his wounds, resulting in a strategic victory for his enemies, who took over

Spears stacked in the stern of a ship, in a carving from Stenkyrka Smiss, Gotland, Sweden. The same motif appears on other contemporary carvings of Viking warships. Spears would have been particularly important as missile weapons at sea, as getting wet could seriously affect the performance of bows. (Per Widerström & Johan Norderäng)

the kingdom. The death of leaders was often decisive in battle, and seeking to kill or disable them from a distance was probably a common strategy.

SIEGE WARFARE

Siege warfare was not a particular strength of the Vikings, or of most of their contemporaries. They did attack numerous fortifications, with mixed success, but they do not seem to have employed particularly sophisticated siege technology. A poetic account of the Viking siege of Paris in 885–86 credits the Vikings with the use of ballistae, catapults, siege-towers and rams, undermining and fire, as well as archery. It should be noted, however, that Abbo of Saint-Germain, the author of the poem, consciously borrowed from a variety of classical sources, and is not a reliable source on such details. The *Annals of Saint-Vaast*, which provide a much briefer account of the siege, mention only the ram specifically, although they also use the term *machina* which might refer to a variety of siege weapons.

Fire and archery do seem to be features of Viking siege warfare. One of the gateways of the late-10th-century fortification of Trelleborg in Denmark suffered fire-damage, and arrowheads were recovered from within it, suggesting that both fire and arrows were used in an attack there. An attempt at undermining at Chester in 907 is also recorded, with the Vikings attacking the walls while protected by wicker hurdles, covered in hides and supported by posts, to defend themselves against both hot liquids and heavy missiles as they dug. Although this sort of protection was a standard feature of later medieval siege warfare, the account of this siege in the Irish *Fragmentary Annals* does not suggest that this was an approach already familiar to the Vikings, as they first attacked without protection, then added the hurdles, then added supports to the hurdles, then added the hides, each time in response to new forms of attack from the defenders of the city.

Attack on a fortification, c.1000 (opposite)

The warriors in the foreground have broken through the defences of an Anglo-Saxon *burh*. The large axes, introduced in the late 10th century, were primarily intended for use in combat, but their size and weight meant that they could be used effectively to break down or chop through doors and other timber defences. The warriors armed with the large axes also carry swords and fighting knives for use at close quarters, and one has a shield on his back to use in combination with his sword. The fact that the warriors are fighting in an open formation means that they have space to use a variety of weapons, including swords and axes, which are difficult to use to full effect in a tight formation. At this late date within the Viking Age, mail shirts are much more common than earlier, and different variations of the conical helmet have completely replaced the earlier spectacle helmet, while the shapes of the sword hilts also reflect the relatively late date. The cruciform pendant worn by the leading warrior also reflects the growing influence of Christianity across the Viking world by this time.



THE SIEGE OF PARIS, 885–86

In November 885 a large Viking fleet sailed up the River Seine to Paris. According to a poem about the siege of Paris by the monk Abbo of Saint-Germain, the Vikings had 700 ships and 40,000 men, while the city was defended by only 200 armed men. The difference between the two sides was deliberately exaggerated for effect, but there is no reason to doubt that the Viking force numbered in the thousands, or that the defenders were significantly outnumbered.

Attacks up navigable rivers were a common feature of Viking warfare, and Paris had been raided several times previously, resulting in tribute payments in exchange for peace. On this occasion Odo, count of Paris refused both tribute and permission to sail upstream, leaving the Vikings with no choice but to attack Paris itself or to retreat.

In 885 Paris itself was limited to the modern Île de la Cité, defended by stone walls, and accessible only from the water or via fortified bridges to the north and south banks of the River Seine. The Frankish defenders were inside the walled city on the Île de la Cité, while the Vikings took control of the surrounding countryside along both river banks, using the monasteries of Saint-Germain l'Auxerrois and Saint-Germain-des-Prés on either bank as bases. The bridges were defended by large stone towers, and controlled access up the river, as well as onto the island.

According to Abbo, the Vikings used catapults, rams and fire-ships, as well as making repeated assaults, but were unable to



take the city. Although the details of Abbo's account are unreliable, other contemporary accounts also indicate that the Vikings lacked the capacity to capture or destroy the city, despite numerical superiority and sufficient control of logistics to maintain their fleet there for several months.

The Frankish emperor Charles the Fat (r. 881–88) raised the siege in October 886, but agreed both to pay a tribute of 700 pounds of silver and to allow the Viking fleet to continue upstream to attack Burgundy (then in the hands of rebels). The result was thus that the Vikings gained through negotiation what they had failed to achieve militarily.

The fact that the Vikings were able to force their way into a number of fortified towns and cities may also suggest the use of rams and/or scaling ladders, while both fire and axes might also have been used to destroy wooden gates. They are also recorded as using ropes and grappling-irons from ships to pull down London Bridge c.1014. Although the detail is only found in later sources, the destruction of the bridge is recorded in contemporary skaldic verse, while a possible grappling-hook was found in the River Thames near London Bridge, together with Viking weapons of the appropriate period.

There is no reliable evidence that specifically describes the use by the Vikings either of ballistae or other forms of catapults, although these may be indicated by the *machinas* of the *Annals of Saint-Vaast*. Some forms of siege engine were apparently known to the Franks at this time, although scholars disagree about precisely which weapons were known. Given the evidence for the Vikings' use of other forms of Frankish weaponry, and that Vikings also found themselves besieged by Franks on occasion, the possibility that some Vikings may have gained familiarity with Frankish siege machinery cannot be ruled out, but it is only a possibility, and certainly its use never became widespread.



IMPACT

Influence and legacy

THE VIKINGS AND THEIR CONTEMPORARIES

The Viking expansion made them the first people in history to have contacts on four different continents, as they travelled east as far as Central Asia, south to North Africa, and west to North America. This brought them into contact with a wide variety of different peoples and cultures, with varying degrees of technological sophistication.

In the east, they encountered powerful and sophisticated Islamic states and the Byzantine Empire (both of which they also encountered when heading around Spain into the Mediterranean), as well as a variety of semi-nomadic peoples in Russia and the Caucasus, including the Khazars, Pechenegs and Volga Bulgars. Closer to home there were Slavic peoples around the southern Baltic and in what would become Russia, Balts in modern-day Latvia and Lithuania, and Finno-Ugrians in Finland and Estonia. In western Europe they had extensive contact with the Franks, while in Britain and Ireland they came into contact with the Anglo-Saxons, as well as a variety of Celtic peoples in Scotland, Ireland, Wales and north-west England. The islands of the North Atlantic were largely unoccupied, but eastern Canada was inhabited by the Dorset peoples, whose technology was still largely limited to stone weapons.

Not surprisingly, such diverse cultural encounters brought the Vikings into contact with a variety of styles of weapons and warfare. Some of these were very similar to those of the Vikings, with minor stylistic differences reflecting the fashions of the different cultures. Others had more fundamental differences, but in both cases there was enormous potential for external influence on Viking weaponry, and for Viking influence on the weapons of others. Given the supposed superiority of Viking weapons, one might expect that their weapons would be widely copied and adapted elsewhere.

Sword from Kaupang Søndre, Vestfold, Norway with Frankish blade or copy. Although the blade is heavily corroded it carries the inscription +VLFBERHT+, the name of a Frankish blade-smith from the Rhineland. (Museum of Cultural History, Oslo; photograph: Vegard Vike/CC BY-SA 4.0)



The picture is rather more complex, however, and includes a major trade in imported Frankish weapons into and around the Viking world. As noted above, as far east as the Volga, the similarity between Frankish and Viking swords was recognized, and indeed was so great that it is not always possible to say with certainty whether an individual sword was of Frankish or Viking manufacture, or a combination of the two. Since the 19th century it has been noted that many ‘Viking’ swords carry inlaid inscriptions in the Roman alphabet, often combined with crosses, a typical feature of Christian inscriptions and texts of the periods. The letters were pre-formed in a different metal or metals (many are pattern-welded), and experimentation suggests that they were hammer-welded into the heated blade. Although a number of inscriptions are known, the most common carries the name VLFBERHT, usually with two crosses. The original Ulfberht blades were apparently manufactured by a Frankish blade-smith in the Rhineland in the 9th century and were of extremely high quality, but variations in the inscription, together with the combination of the blades with different hilt types, indicate that the blades continued to be manufactured into the 12th century. While some have seen this as an indication that the Ulfberht inscriptions represent a sword-making family working over many generations, the quality is highly variable, and it seems likely that many of the blades were simply poor copies of a design initially known for its high quality. Many of these copies may have been made within the Viking world.

To complicate things further, Ulfberht and other Frankish inscribed blades are sometimes combined with hilts of Frankish type, and sometimes with hilts of Scandinavian type, while swords without inscribed blades but with Frankish hilt types are also found in Viking contexts. The various permutations suggest the movement of both complete swords (which might have been acquired through raiding or trading) and of Frankish blades which probably were also moved through trade and then customized with local hilts. In addition to swords, a type of spearhead with projecting wings on either side of the socket seems to have originated with the Franks, but is again found across the Viking world, and surviving examples may well include Scandinavian copies as well as their Frankish prototypes.

The movement of Frankish weapons into Viking hands is reflected in the written evidence. A number of Frankish rulers attempted to limit the export of arms, armour and horses, recognizing that allowing these to fall into the hands of the Vikings only made them more dangerous. As early as 781, Charlemagne (r. 768–814) forbade the export of arms in trade, while his grandson Charles the Bald (r. 843–77) specifically addressed the provision of weapons, armour and horses to the Vikings in his Edict of Pîtres in 864. This law code was written in the context of major Viking raids in western Francia, and notes that the provision of such material, whether in exchange for payment, or as a form of ransom, was dangerous to the kingdom as a whole, and would be regarded as treason. This is interesting because it makes clear that weapons might come to the Vikings through ransom payments as well as through trade, while other weapons may have been recovered from defeated enemies on the battlefield.

There are also specific references to Frankish (and possibly Anglo-Saxon) weapons in the poem *Haraldskvæði*, composed in Norway c.900, which refers to *vigra vestœnna ok valskra sverða* ('Western spears and Frankish [or foreign] swords'). *Vestœnna* and *valskra* are ambiguous terms, and have been chosen to fit the poetic form. Because both Anglo-Saxon and Frankish swords seem to have been spreading into Viking lands at this time, the poem could plausibly refer to either or both, although Anglo-Saxon influence on Viking spears is less easy to determine.

There was also influence from the east. Excavations at the town of Birka in eastern Sweden have identified eastern influence on both weapons and armour, leading to the interpretation that there was a garrison of troops stationed at a particular site on the edge of the town who, if they were not themselves foreigners, at least had cultural affiliations influenced by eastern contacts. This includes archery gear of types used by nomadic horsemen, and lamellar armour (otherwise unknown in Viking Scandinavia), which could be influenced by the Khazars, or the Byzantine Empire, or the Islamic Caliphate.

This does not mean that all of the impact of cultural contact was in one direction. Although the spread of Frankish blades has been noted, this must be seen in the context of the close similarity between Frankish and Viking weapons, and the spread of Viking weapons around the wider Viking world. In particular, Viking swords, spears and axes have been discovered archaeologically across eastern Europe from Russia down to Bulgaria. The name Russia derives from the term *Rus*, which probably originally referred to a specific tribe or people in eastern Sweden, and then came to be used in Arabic and Byzantine sources for Scandinavians generally, as well as specifically for the inhabitants of modern Russia, Belarus and Ukraine. There is no doubt that the Vikings had an important influence in the development of 'Russian' society, but scholarly opinion remains divided as to how large a proportion of the population were ethnically Scandinavian during the Viking Age. The population certainly also had a strong Slavic component, and contemporary accounts of the Rus suggest that they also assimilated aspects of their society from the Khazars and other peoples already living in the region. The Viking weapons in these areas (including those which incorporate Frankish blades) are mostly found in graves, which often contain other objects of Scandinavian character. It is unclear, however, whether these graves reflect settlement by Scandinavian Vikings, or the spread of Scandinavian fashion and cultural identity among a more mixed population. Either way, Viking weapons undoubtedly spread to the east in the course of the 9th and particularly the 10th century. It is possible that some of those deposited in areas such as modern Bulgaria, which are not thought on other evidence to have been areas of Viking settlement, may have been carried there by 'Varangians', Scandinavian auxiliary troops in the Byzantine army who were recruited in large numbers from the late 10th century onwards to serve in the wars against the Bulgars. Although later interpretations have turned the Varangians into elite troops, feeding the myth of the superiority of the Viking warrior, they fit into a long tradition of the use of expendable 'barbarian' auxiliaries within the Roman and Byzantine armies.

Byzantine records also note one of the other significant impacts of Viking weaponry, which was the spread of the large double-handed war axe from the late 10th century onwards. In common with other auxiliary troops in different periods, the Varangians largely seem to have been encouraged to use the weapons with which they were already familiar, rather than being forced to adapt to the less familiar weapons and armour of the Byzantine army.

These large axes appear in Byzantine sources as a distinctive feature of the Varangians, because they were otherwise unknown in Byzantine warfare, but they also spread to Anglo-Saxon England in the late 10th and 11th centuries. A number of large axe-heads of this type have been recovered from England, although it is uncertain whether they were deposited by Anglo-Saxons or Vikings. The period of Danish rule in England under Cnut the Great and his sons (1016–42) probably helped to diminish any clear distinction between Anglo-Saxon and Danish traditions, which already overlapped. In any case, both Norman texts and the Bayeux Tapestry make it clear that such axes had become a standard element in Anglo-Saxon armament a generation after native Anglo-Saxon rule was restored in the person of Edward the Confessor (r. 1042–66). In this context it is notable that Anglo-Saxon exiles after the battle of Hastings in 1066 joined the ranks of the Varangians in Byzantium, and would probably have had little difficulty in assimilating into a force with a directly comparable weapon set.

Influence between Anglo-Saxons and Vikings seems to have been a two-way process in many respects. Scandinavian art-styles became popular in those parts of England settled by the Vikings, reflected in sculpture and personal ornaments. At the same time, there was some influence of Anglo-Saxon styles and designs in Scandinavian metalwork of the late Viking Age. The fact that sword hilts and spearheads of ‘Viking’ type are relatively common from the British Isles (including stray finds as well as from more obviously ‘Viking’ pagan graves), while other types apparently of Anglo-Saxon origin became popular in Scandinavia, suggests a two-way flow of form and design. This makes it very difficult to be certain in some cases whether the origins of specific surviving weapons were Anglo-Saxon, Viking or of hybrid Anglo-Scandinavian style.

Another important impact of the Vikings on military technology was the spread of archery. Although the Vikings may themselves have been exposed to a limited influence of eastern mounted archery, arrowheads suggest that typically Viking bows and arrows spread across the Viking world. Once again, the extent to which references to archery in late Anglo-Saxon warfare represent a common Germanic tradition or direct Viking influence is unclear. By contrast, archaeological evidence indicates that there was no tradition of archery in pre-Viking Ireland, and that it was adopted both in areas of Viking settlement and in some areas which remained under native control.

A final area in which influence and impact remain the subject of academic debate is the extent to which Islamic metalworking techniques may have influenced the construction and design of Viking swords, and whether Viking swords in turn were superior to those of the Islamic



Sword from Steinsvik, Tjeldsund, Nordland, Norway. The hilt is a Frankish type of the early 9th century. (Museum of Cultural History, Oslo; photograph: Eirik Irgens Johnsen/CC BY-SA 4.0)

Sword with remains of scabbard from Dybäck, Sweden, 10th century. The curved upper and lower guards are typical of this period, in a style which apparently began in England, but which was widely copied in Scandinavia. In this case the hilt fittings and the top-mount are decorated in the Winchester style, pointing to an Anglo-Saxon origin, but in other cases it can be harder to tell the difference between Anglo-Saxon and Viking swords of similar design. (CM Dixon/Print Collector/Getty Images)



world. It has been suggested that some Ulfberht blades were forged from crucible steel, a technique known in the Islamic world in the Viking Age, but otherwise unrecorded in western Europe at this time, but the results of this analysis have not been accepted by all scholars.

It has also been suggested that the technique of pattern-welding may have been intended to replicate the effect of 'Damascened' blades from the Middle East, as this technique also produces a decorative effect on the blade not unlike some of the more elaborate patterns found in pattern-welding. This seems unlikely on chronological grounds, as pattern-welding was well established in north-western Europe in the centuries between the collapse of the western Roman Empire in the 5th century and the Viking expansion of the late 8th century, and there was little contact between north-western Europe and the Middle East during this period.

There is also no evidence that the Vikings considered swords from the Islamic world to be better than their own, and Ibn Miskawayh's account of the Viking attack on Bardha'a in 943–44 suggests that the opposite was the case: 'When one of them dies they buried him with his arms, clothes and equipment ... After they left the Muslims dug up the graves and found a number of swords, which are in great demand to this day for their sharpness and excellence' (Lunde & Stone 2012: 151).

PHYSICAL IMPACT

All Viking weapons were capable of inflicting lethal wounds. This is clear from accounts of conflict in the period, from visible injuries to skeletal remains, and from modern experimentation with replica weapons. The efficacy of Viking weapons was increased by the fact that it was only in the later part of the Viking Age that mail shirts became common, but even then parts of the body were left exposed. The face and neck were vulnerable in most of the known helmet types of the period. Those parts of the arms and legs not protected by mail were also very vulnerable. Even protected by mail and helmets, the sheer weight of impact that some Viking weapons could deliver was quite literally bone-shattering. In this respect, the great double-handed war axe was probably the deadliest weapon, as the weight and momentum of a blow with full force would almost certainly be fatal even through mail and padding. To a lesser extent the concentrated force of blows from spearheads and smaller axes would also cause severe damage to soft tissue even if they did not penetrate.

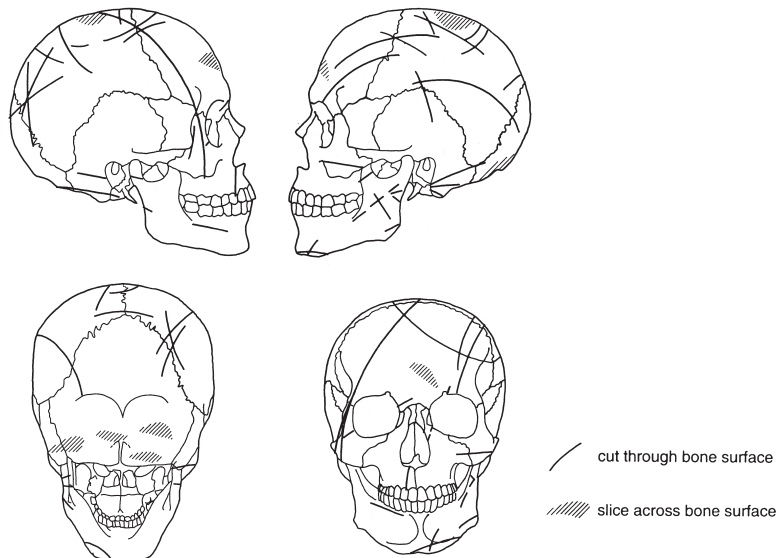
Weight aside, the weapons of the period were capable of taking a good edge, and the combination of sharpness and weight meant that they had considerable penetrating and/or cutting power. Saga accounts not infrequently feature arms and legs being cut through with a single blow, and while some of these descriptions may be written for dramatic effect rather than being accurate eyewitness accounts, this does not mean that they give an inaccurate impression. A warrior grave at Repton in Derbyshire showed evidence of multiple injuries which indicated he was probably killed by a blow which fractured his femur, and would also have

severed his femoral artery. A boar's tusk strategically placed in the grave close to his groin may also represent a symbolic replacement for missing genitals.

The Ridgeway mass grave found near Weymouth in Dorset contained just over 50 decapitated skeletons. Examination of the skeletons showed that the victims had been beheaded with swords. While this had taken repeated blows in some cases, this was not the case with all of them, and it seems clear that with sufficient skill a Viking sword could be used to cut off a head with a single blow, as described in several of the sagas. The Ridgeway skeletons also show very clearly the way in which a sharp sword could cut through bone, as several bones, including skulls, have areas of bone shaved away by the edge of a sword. Weapons which could do that could also easily sever the thinner bones of forearms and lower legs. Other graves show evidence of crushed skulls, and the Gjermundbu helmet arguably shows weapon damage as well as corrosion, a reminder that even helmets could not fully protect from the force of a heavy blow.

It is also important to remember that skeletal remains do not provide the whole picture, and that soft-tissue damage to the torso could be fatal without any bones being broken. Even a small knife can cause serious penetrating injuries, and Viking fighting knives were large and heavier than most modern knives. A thrust below the shield into the groin or lower abdomen would not necessarily encounter bone, but any deep penetration would almost certainly encounter vital organs, while a thrust to the face could penetrate the brain through the eyes or mouth without leaving a mark on the skull.

In addition to wounds which would be immediately or quickly fatal today, many injuries which would now be treatable would have been fatal in the Viking Age. Medical knowledge in western Europe was less primitive than is sometimes supposed, and surviving Anglo-Saxon medical texts such as *Bald's Leechbook* and the *Lacnunga* show some awareness



Weapon injuries to a skull from St Andrew's Cemetery, Fishergate, York. Although this dates from a little after the Viking Age, the skull demonstrates characteristic injuries, including both sword-cuts into the bone, and cuts which have shaved across the surface of the skull. (York Archaeological Trust)



of Classical medicine, but it is unclear how widespread such knowledge was even in monastic circles, and many parts of the Viking world had no access to such knowledge. Surgical knowledge was also comparatively basic by modern standards, and keeping wounds sufficiently clean to prevent infection meant that what would now be relatively minor wounds might easily have led to amputation or death, while severe wounds were probably fatal in the vast majority of cases.

Weapon injury from St Andrew's Cemetery, Fishergate, York. The heavy notch in the bone has been caused by an axe. (York Archaeological Trust)

THE PLACE OF VIKING WEAPONS IN HISTORY

The weapon set of the Viking warrior represents a stage in the evolution of medieval weapons, rather than a fundamental change. As discussed above, there was interaction throughout the Viking Age between the Vikings and their Anglo-Saxon and Frankish neighbours, and this built on similarities in weapons and armour that already existed before the beginning of the Viking Age in the second half of the 8th century. In part this reflects pre-existing contacts, and the influence of Frankish military organization, including styles of armament, has been argued as a feature of warfare in Denmark in the 7th and 8th centuries. There is also a strong element of shared heritage, however, as the Anglo-Saxons, Franks and Scandinavians all came from the same Germanic roots, with similarities in language and customs, as well as in material culture. Although these had begun to diverge more in the centuries leading up to the Viking Age as the Anglo-Saxons and Franks settled within the former Roman Empire and adopted Christianity, weapons and armour continued to show strong similarities, and parallels can be drawn between the glorious Anglo-Saxon weapons and armour of the Sutton Hoo ship burial, dating from the early 7th century, or the Staffordshire Hoard later in the same century, and comparable material from the Vendel and Valsgärde cemeteries in Sweden.

Another element of shared heritage was that Germanic warriors from Scandinavia as well as further south had served as auxiliaries in the late Roman army. The combination of spear and shield as primary weapons, with a sword as secondary weapon, can be traced through from the equipment of late Roman cavalry. Roman infantry traditionally used a *gladius*, or short sword, when fighting in formation at close quarters, and arguably the use by Vikings and Anglo-Saxons of the fighting knife in the shield-wall was a development of the same approach. The *spatha*, or long



sword, was originally a cavalry weapon, however, and the frequent association of riding gear with weapons in the pre-Viking period suggests that there was at least some continued use of horses in warfare during this period. An origin in a cavalry weapon also explains the development of the single-edged sword, as this is a feature of cavalry weapons in many periods and cultures.

The single-edged sword largely fell out of use in the course of the Viking period. The other main developments in sword technology in this period are a tendency (borrowed from the Anglo-Saxons) towards a longer, slimmer blade in the later Viking Age, and the evolution of the hilt. European swords of the 4th and 5th centuries already had pommels for balance, but minimal cross-guards to protect the hand. Both pommels and cross-guards had already begun to expand before the Viking Age, although still offering little real protection, and this development continued under the Vikings to the point that hilt fittings became increasingly functional rather than just decorative. Both the development of hilts and the tendency towards longer blades continued after the Viking Age, ultimately resulting in the development of hand-and-a-half and double-handed swords, although the combination of single-handed sword and shield also continued for centuries after the Viking Age.

The use of the axe as a weapon of war was more distinctively Germanic, and even more distinctively Viking, but less of a feature of Anglo-Saxon and Frankish warfare in the Viking Age, until the large double-handed axe of the late Viking Age became popular following the Danish conquests of the early 11th century (see p. 12). This large axe was perhaps the most notable innovation within the Viking weapon set. If, as seems likely, it was developed as an anti-cavalry weapon, it would be a precursor in function as well as form to later medieval pole weapons including the pike, halberd and bill.

Full-length longbows are already recorded in Scandinavia in the Roman Iron Age, in the Danish weapon deposits of Illerup and Vimose. These were relatively slender compared with the great war bow of the later Middle Ages, however, and must therefore have had a more limited draw-weight, resulting in a shorter range and lesser impact. Viking bows also appear to have had lower draw-weights than later longbows, but nevertheless had significant power, while the 'armour-piercing' arrowheads of the late Viking Age can certainly be seen as the precursors of late medieval bodkin heads. While there is no evidence to suggest that bows were as common in the Viking Age as they were to become from the 12th century



Large axe-head from the River Thames, near Hammersmith, London, late 10th or 11th centuries. Large double-handed axes like this were introduced by the Vikings in the late 10th century, but were also adopted by the Anglo-Saxons before the Norman Conquest of 1066. (© The Trustees of the British Museum)

onwards, or that they had such devastating impact, there is no reason to doubt that they represent a significant stage in the evolution of the longbow in medieval warfare.

VIKING WEAPONS IN POPULAR CULTURE

Despite repeated attempts since the 1960s by museums and broadcasters to promote the more peaceful achievements of the Vikings, and to emphasize that warfare was only one aspect of the Viking Age, the prevalent image of the Viking in popular imagination is of a warrior. Even an institution such as the Jorvik Viking Centre in York, which displays the evidence for York as an Anglo-Scandinavian centre for craftsmanship and trade, and which has done more than most to emphasize these aspects of Viking-Age activity, for many years marketed itself with the motif of a bearded and helmeted Viking warrior, and the caption 'Eirik Bloodaxe rules OK'. The helmet design was based on the Gjermundbu helmet (see p. 25). A recent international exhibition on the Vikings in Copenhagen, London and Berlin chose to use a real Viking sword as the poster image, while another recent exhibition on Vikings at the National Maritime Museum in Falmouth, Cornwall used an image of a Viking warrior with weapons and armour based on genuine prototypes. Most popular representations of Viking warriors have made less attempt to base themselves on fact. Instead, they have drawn on perceptions of Vikings founded in 19th-century Romanticism, further refined by imagery drawn from Viking films, and from the growing genre of Fantasy art in the late 20th and 21st centuries. Typically, neither weapons nor

OPPOSITE

Pre-Viking sword from Bildsø, Sorø Amt, Denmark. The general shape of the sword is similar to those of the Viking Age, but the gold and garnet fittings are characteristic of the late 6th and 7th centuries. (Arnold Mikkelsen/ National Museum of Denmark)

armour bear much resemblance to any surviving artefacts from the Viking Age.

The most common symbol of the Viking warrior is of course the horned or winged helmet. This entered the popular imagination in the 19th century, when it also appeared in representations of other heroic 'barbarians' of the past, including Anglo-Saxons and Celts, but for some reason it has become more specifically associated with the Vikings, despite the fact that there is no evidence at all for Vikings having horns or wings on their helmets, unlike the Celts, who certainly did. Nevertheless, the horned helmet has become emblematic of the Vikings, and continues to be widely used by cartoonists, corporate branding and manufacturers of tourist souvenirs to conjure up an image that is immediately recognizable as 'Viking'.

Two weapons also seem to be particularly associated with the Vikings, and both are equally inaccurate. The first of these is the double-headed axe, with equal half-moon blades on either side of the shaft. Double-headed axes are known in other periods and cultures, as well as featuring heavily in Fantasy art, but they are not a common feature of early medieval European warfare generally, and are completely unknown in Viking

Two warriors engaged in combat, on a stone from Hunninge Klinte, Gotland, Sweden. The image shows the shields with the edges extended. This may just be a stylized representation, but it may show shields deliberately extended to engage the opponents' swords proactively rather than passively defending. (Per Widerström & Johan Norderäng)





contexts. As noted above, although Viking axes could be of considerable size, they were single-headed, and even those with eastern influences which had a smaller projection at the back of the head were a very different shape from the double-headed stereotype.

The other weapon which often appears in popular representations of the Vikings is a large hand-and-a-half or double-handed sword. Again, these were not a feature of early medieval European warfare, and were only introduced long after the end of the Viking Age. Nevertheless, they frequently appear in artwork, and in film and television representations when the producers do not consider historical accuracy to be important.

Why is there this tendency to misrepresent the Vikings, despite a wealth of available evidence? As this book shows, Viking weapons could be both beautiful and effective, so even if one wishes to focus solely on the warlike achievements of the Vikings, it is perfectly possible to portray them accurately, and in a way that reflects their genuine success in warfare. Nevertheless, popular taste seems to prefer to persist with favouring fantasy over reality. This is probably for two reasons. The first is very simply that most Viking weapons are not sufficiently 'Viking' to distinguish them from other cultures. Similarities and interactions with Frankish and Anglo-Saxon weapons have been discussed at various points, and while subtle changes in the shape of sword hilts or spearheads may be immediately recognizable to the enthusiast, the fundamental appearance of weapons did not really change dramatically until well after the Viking Age. Secondly, the popular perception of the Vikings also sees them as unusually large, strong and savage, and they are often shown with bared arms and even torsos to show off their over-developed muscles.

Fantasy Viking with outsized swords. Neither of the swords in this image resembles genuine weapons of the period, but they conform to a wider genre of Fantasy art and cinema. (Lorado)

With the exception of the large double-handed axe, Viking weapons, for all their effectiveness, are simply too subtle to fit the muscle-man stereotype. In other words, they are simply not 'Viking' enough to be Viking weapons in the popular imagination. Double-headed axes and double-handed swords may not have existed in the Viking Age, but for some they fit the myth of the strength and savagery of the Viking warrior better than the real thing.

VIKING COMBAT TODAY

Viking combat today is necessarily a reconstruction. Because the Viking Age ended 900 years ago, and because there are no detailed contemporary accounts of exactly how they fought, any attempt to demonstrate Viking combat techniques necessarily involves a considerable element of more or less informed guesswork. There are four main approaches to reconstructing Viking combat, although there is some overlap between them.

The most common form of modern Viking combat takes place within the framework of historical re-enactment. The popularity of re-enactment has been growing steadily since the 1960s, and there are many thousands of re-enactors today across the world portraying the Viking period. In some cases modern re-enactors are the second or third generation within their families to be involved, and this allows for the transmission of skills from one generation to the next in a similar way to the Viking Age itself. Re-enactment events also provide an opportunity for much larger audiences to observe a representation of Viking combat without participating themselves. The numbers vary from small displays of 20 or fewer combatants, up to full-scale battles involving hundreds, and thus provide an opportunity to explore anything from individual hand-to-hand combat to large-scale formation movements.

The limitations of re-enactment are largely related to safety. Most re-enactment groups fight with weapons with rounded edges for safety. This affects the balance of the blades, however, and therefore the way they handle, while arrows with blunted rubber tips fired from bows with a limited draw-weight give a completely false impression of how effective archery could be in battle. Although rules vary from group to group, most groups also have strict rules about pulling blows to avoid striking too hard, and many also have 'off-target' areas, such as the head, lower arm and lower leg to avoid accidental injury. Because all of these areas of the body (especially the head) would have been targets in the Viking Age itself, this is again seriously misleading. Most groups build their fighting styles around a limited series of core moves which lend themselves to extended safe combat without the need for choreography, and which can be used either for 'show fighting' in which the aim is to entertain the audience, or for competitive combat in which the aim is to score 'kills'. The result is a style of combat which is enjoyable for both participants and audiences, and which conveys some sense of how Viking weapons could be used individually and in formation, but which can never replicate real combat.



A second important area which has grown in recent years is the field of Historical European Martial Arts (HEMA). Again, there are different groups, with different approaches, but the aim of HEMA is to reconstruct historical fighting techniques from a variety of periods through direct reference to historical fighting manuals, and to do so with weapons as close as possible to the original, including the use of sharp or semi-sharp weapons, often combined with modern protective gear to reduce the chance of injury. This allows a more realistic handling of weapons than re-enactment, although there are still often limiting rules. Because fighting manuals survive from the 13th century onwards, and in increasing numbers from the 15th and 16th centuries, HEMA has been able to provide and test a large amount of data about late-medieval and Renaissance fighting techniques. The problem with applying this to Viking combat is that there are no surviving manuals from the period itself, and weapons had evolved between the Viking Age and the later medieval period. As a result, while to some extent it is possible to project later techniques back, and to use this to explore how Viking weapons could be used, the fact that weapons *could* be used in a certain way does not prove that they *were*.

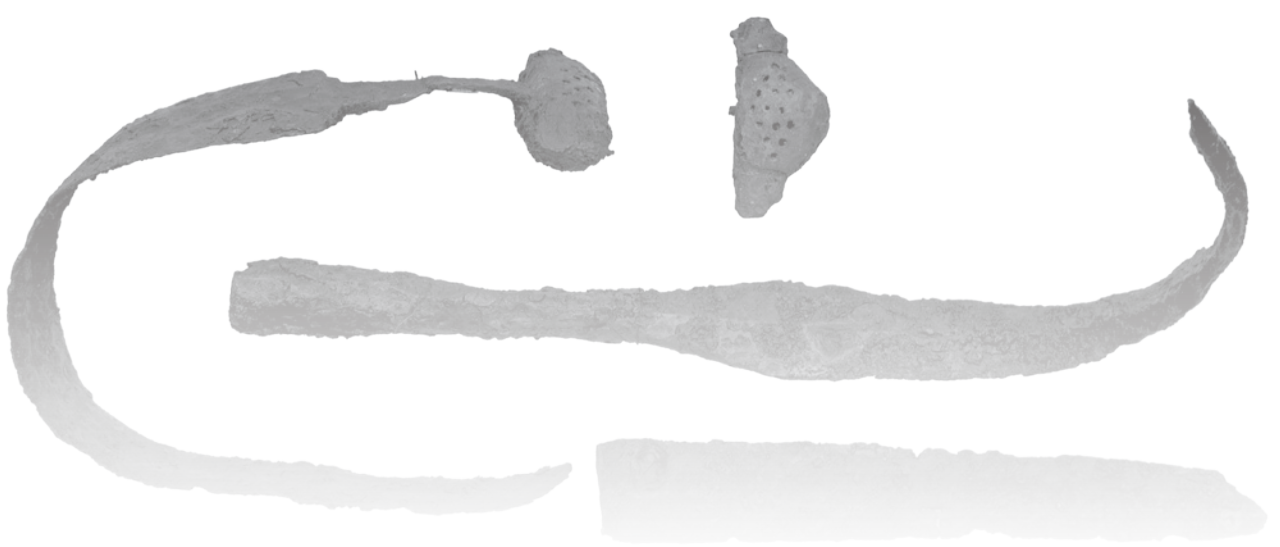
Re-enactors at the Jorvik Viking Festival, York. The combatants represent a mixture of well-armed warriors and lightly armed conscripts. (Ian Forsyth/Getty Images)



Experimental trials of replica Viking swords and shield. The combatants are dressed in a combination of late medieval armour and HEMA protective clothing, as their concern is to test the weapons safely, not to look authentic. (Rolf Warming, Society for Combat Archaeology)

A third area of exploration is archaeological experimentation. This takes direct archaeological evidence, such as the form of surviving weapons, as well as visible skeletal injuries, and attempts to replicate them. This can involve the making and testing to destruction of replica weapons, armour and shields (see p. 54), as well as careful calculation of the angles necessary to inflict particular injuries known from the archaeological record, forensic examination of skeletons to ascertain exactly which type of weapon caused a specific injury, and test-cutting using replica weapons on animal carcasses. These forms of archaeological experimentation allow those involved to experiment with the reality of cutting flesh and bone with the appropriate weapons, but lack the dynamic movement that would be an important element in real combat. Elements of archaeological experimentation have been used to inform both re-enactment and HEMA.

A final form in which Viking combat can be seen today is film and television, with the Vikings remaining a popular theme for action dramas. Such representations are carefully choreographed, and often use lightweight weapons, but many of the weapons featured in such fictional representations of the Vikings were unknown in the Viking Age (see p. 71). Since the 1980s, however, there has been a major shift away from a very limited range of blows in stage combat to an approach informed by both HEMA and eastern martial arts, while the use of special effects and carefully choreographed movements means that film and television can convey aspects of Viking combat far more graphically than would ever be possible with the safety constraints of re-enactment or HEMA.



CONCLUSION

Viking weapons have in recent years enjoyed a revival of interest. In part this derives from the fact that there have been a number of major exhibitions on Vikings in recent years. While these exhibitions have brought out the breadth and diversity of the Viking Age as a whole, many have chosen to highlight some of the beautiful and effective weapons that survive from the period. If raiding and warfare as the archetypal ‘Viking’ activities typify the Viking Age, the weapons represent that aspect of Viking society. At the same time, the success of television dramas such as *Vikings*, *The Last Kingdom* and *Game of Thrones* has helped to generate new interest in Viking weapons and warfare.

Viking weapons can be seen in many museum collections. The most important of these are the National Historical Museum in Stockholm, the National Museum of Denmark in Copenhagen and the Museum of Cultural History in Oslo. The Museum of Cultural History has a particularly fine collection of swords, as well as the unique Gjermundbu helmet and mail, and several complete Viking shields. The collection in Stockholm is strong on weapons of eastern Viking style, and also has weapons and armour of non-Scandinavian style imported from beyond the Baltic to the Viking town of Birka, a few kilometres inland from Stockholm. The National Museum of Denmark’s collection also includes major groups of weapon finds from pre-Viking Denmark, demonstrating the development of weapons in the centuries up to and including the Viking Age. The Museum Gustavianum in Uppsala also has a fine collection of both pre-Viking and Viking weapons from burials at nearby Valsgärde. Other important groups of Vikings weapons can be seen in regional museums in all three Scandinavian countries, and in a number of other countries bordering the Baltic. Within Britain, there are important collections of Viking weapons in both the British Museum and the Museum of London. The National Museums of Scotland in Edinburgh also has some fine examples, as does the National Museum of Ireland in



Re-enactors at the Jorvik Viking festival, York. The warrior on the extreme right wears a helmet and lamellar armour inspired by finds from eastern Europe. These have become popular within Viking re-enactment generally, despite a complete lack of evidence for them across most of the Viking world. (Ian Forsyth/Getty Images)

Dublin, including a beautiful Frankish sword hilt imported by the Vikings, as well as a rare example of a Viking longbow.

While most of the best surviving examples from the Viking Age itself are in museum collections, it is possible to obtain good modern copies, often at reasonable prices. These include blunted weapons for re-enactment and HEMA combat, as well as sharp and semi-sharp weapons designed more for display than for use. Both combat and display weapons vary considerably in quality and price, from the mass-produced to the individually hand-crafted. A number of blade-smiths now recreate not just simple blades but pattern-welded blades.

Some caution is needed when purchasing modern reproductions, however, as the extent to which these reflect the originals also varies considerably. Many mass-produced examples are only loosely copied from Viking prototypes, or from film and television props rather than from genuine Viking weapons, but are sold as ‘replicas’. One expensive but mass-produced set of sword, scabbard and baldric is directly copied from a photograph in a book of one of the author’s own hand-crafted re-enactment swords and fittings, without the manufacturer ever having had sight of the original. Mass-produced weapons claiming to be pattern-welded are often made by other techniques, such as surface patterning by acid, and the finishing of hilt fittings is also often inaccurate. Nevertheless, it is possible with care to obtain good copies of all of the major types of Viking weapons.

OPPOSITE

Re-enactment weapons from a number of different suppliers. All of the weapons are based on original finds, but blunted for safety. (Author’s collection)



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Dedication

For Lesley
Always a warrior, if not a Viking

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Editor's note

Metric units of measurement are used in this book. For ease of comparison please refer to the following conversion table:

1m = 39.37in
1cm = 0.39in
1mm = 0.04in
1kg = 2.20lb
1g = 0.04oz

Front cover, above: A late 10th-century sword. The blade is from Skoven, Lesjeskogen, Norway, and is combined with hilt fittings apparently originally from another sword, possibly from Kosgården Åsnes, Hedemark, Norway. (Museum of Cultural History, Oslo; photograph: Eirik Igens Johnsen/CC BY-SA 4.0)
Front cover, below: © Osprey Publishing.

Title-page image: Carving of a warrior from Brailsford, Derbyshire, 10th century. This carving comes from a stone cross dating from after the Viking settlement of this part of England. Place names show that there was extensive rural settlement, and by the time this cross was made, most of the descendants of the Viking settlers would have been primarily farmers, rather than full-time warriors. The ideal of being even a nominal warrior was still important in terms of status for landowners, however, both in the Viking homelands and in their settlements overseas. (Author's collection)